

BARRACUDA

Smart Coder

Digital MPX and RDS Coder

User Manual

Stereo Generator and RDS Encoder

(Rev. 2.0 EN)



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THANK YOU FOR CHOOSE AXEL TECHNOLOGY BARRACUDA, the Smart Coder!

MAIN FEATURES

- ✓ Digital RDS/ RBDS encoder and MPX Stereo Generator, 1 RU, with display and operation buttons on front panel.
- ✓ 2 RS232 opto-isolated ports for RDS management, by the software Smart Coder Remoter available with the unit.
- ✓ MPX/RBDS out repeated on a second BNC connector for test/monitor purposes
- ✓ 2 Aux Inputs on BNC connector, adjustable input level via dedicated trimmer.
- ✓ Sync Out
- ✓ Optional Digital inputs on XLR connectors
- ✓ GPI port for TA service & Split Option

RDS/RBDS ENCODER SECTION

- ✓ Digital encoder with state-of-the-art spectral and encoding performances
- ✓ Digital modulation generated from DSP with 24 bits DAC at 768kHz with more than 100dB dynamics
- ✓ RDS static services (as shown in the table below)
- ✓ Full Remote configuration for all services and RDS/RBDS parameters, via included Smart Coder Remoter software
- ✓ Simple text interface (ASCII code) that make all the RDS/RBDS parameter changes quick and easy.
- ✓ Configuration is saved on the control PC, and may be replicated on different units.
- ✓ 1 independent RDS/RBDS datasets

MPX STEREO GENERATOR SECTION

- ✓ MPX digital generator with state-of-the art spectral and encoding performances
- ✓ Digital modulation generated from DSP with 24 bits DAC at 768 kHz with more than 100dB dynamics
- ✓ Full digital setup parameters, manually adjustable from front control panel

THE STATE OF THE ART

Barracuda has been accurately designed to satisfy the most demanding requirements in FM Stereo generation and advanced RDS/RBDS encoding. It is built with the best cutting-edge technology: surface-mount components and multi-layer circuit boards keep the signal path safe from any issue, providing the purest modulation quality. Its digital architecture guarantees long term reliability and easy firmware updates, directly on field or from remote. Barracuda is the Axel Technology's n°1 Smart Coder RDS/RBDS and Stereo Generator

It has been designed to provide every custom requirement from the Regional/Local Broadcaster, up to the Structured Network.

Barracuda communication features have been enforced with comprehensive remote control via RS232 or modem. UECP Standard protocol allowed. It can be easily interfaced to various Automation Systems and offers an ASCII protocol for broadcast song/artist information.

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2 INTRODUCTION

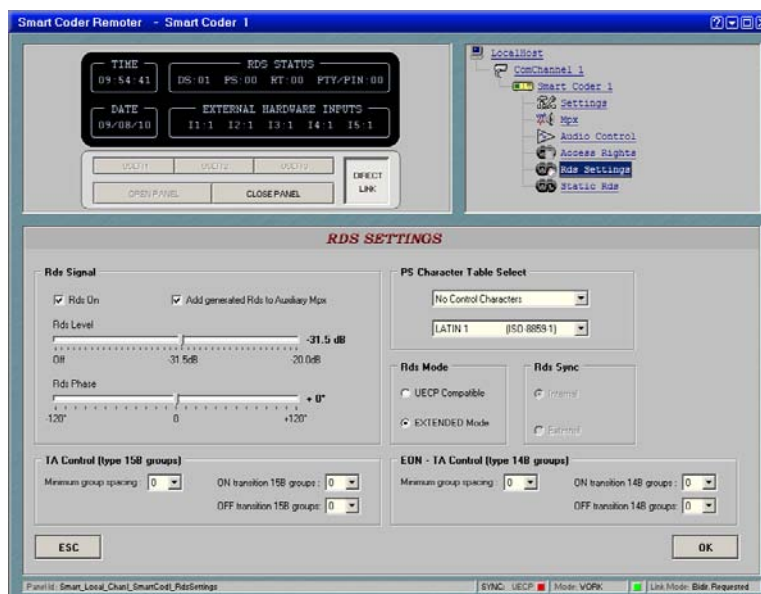
BARRACUDA AVAILABLE VERSIONS AND OPTIONS

BARRACUDA	Digital MPX and RDS/RBDS Encoder
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Options	Description
Barracuda-DG-IN	Digital Audio Input – AES/EBU and TOS-LINK
Barracuda-Split	Split Circuit option

2.1 A POWERFUL, CENTRALIZED REMOTE CONTROL

One of the most important Barracuda 'key feature' is its total remote control capability via the Smart Coder Remoter dedicated software running on all current Windows platforms. Either bi-directional or unidirectional, local and remote communication modes (Serial or Modem—see options) are supported. The software screens reproduce, effectively and intuitively, all the controls available from the front panel menu, and integrates them with new and useful functions for remote programming. F.i, it is possible to give a specific address to every piece of equipment (Target) and to assemble them into groups, enabling selective or multiple Target programming at a glance. The Smart Coder Remoter incorporates also a Configuration Editor, which makes viewing or changing the Barracuda current settings still easier. Any operative configuration of a given encoder (f.i. input gain, pilot level, RDS messages, etc) may be modified or set through commands / values provided in a textual (ASCII) way. At any time system parameter settings can be saved, recalled or easily replicate on a limitless number of Targets!



2.2 IDEAL FOR TRANSMITTING SITES

The Barracuda can be installed at the studio or transmitter, depending on Yr system requirements. In the most common applications, the Barracuda will be located at a scattered array of transmitting sites, receiving separated L & R processed audio via STLs and directly driving the FM Exciter. The Smart Coder Remoter control software may be also proven very useful for centralized control of distant Barracuda units: from a central console and through multiple ways (radio and ISDN links, satellite data, IP connections, etc), You will have the whole network under Yr fingers! The Barracuda's Limiter input stage – combined to the high-performance audio clipper – efficiently removes STL induced overshoot from processed signal while maintaining constant the average modulation level. An AGC stage dynamically compensates for every input level alteration, always allowing to achieve the best modulation, even when inputs are not finely tuned.



This product has been
developed in collaboration with
Audio Devices
Hardware & Software Engineering

3 SAFETY WARNINGS / ISTRUZIONI PER LA SICUREZZA

SAFETY WARNINGS

CONSIGNES DE SÉCURITÉ IMPORTANTES

ISTRUZIONI IMPORTANTI PER LA SICUREZZA

WICHTIGE SICHERHEITSHINWEISE

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

(Rel. 1.3)

3.1 FOREWORD

For your own safety and to avoid invalidation of the warranty all text marked with these Warning Symbols should be read carefully.



Information in this manual is subject to change without notice and does not represent a commitment on the part of the vendor.

The manufacturer shall not be liable for any loss or damage whatsoever arising from the use of information or any error contained in this manual, or through any mis-operation or fault in hardware contained in the product.

It is recommended that all maintenance and service on the product should be carried out by the manufacturer or its authorised agents. The manufacturer cannot accept any liability whatsoever for any loss or damage caused by service, maintenance or repair by unauthorised personnel.

4 SAFETY WARNINGS

The installation and servicing instructions in this manual are for use by qualified personnel only.

- **Read All Instructions.** All safety and operating instructions must be read before operating the product. They also must be retained for future reference, as it contains a number of useful hints for determining the best combination of equipment settings for Yr particular application.
- **Heed All Warnings.** All warnings on the product and those listed in the operating instructions must be adhered to.
- **Heat.** This product must be situated away from any heat sources such as radiators or other products (including power amplifiers or transmitters) that produce heat.
- **Power Sources.** This product must be operated from the type of power source indicated on the marking label and in the installation instructions. If you are not sure of the type of power supplied to your facility, consult your local power company. Make sure the AC main voltage corresponds to that indicated in the technical specifications. If a different voltage (ex. 110/115 VAC) is available, open the equipment closure and set the voltage switch on the main supply circuit, located behind the AC socket
- **Power Cord Protection.** Power supply cords must be routed so that they are not likely to be walked on nor pinched by items placed upon or against them. Pay particular attention to the cords at AC wall plugs and convenience receptacles, and at the point where the cord plugs into the product
- **Use only with a cart,** stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- **Lightning.** For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the AC wall outlet and the audio connections. This will prevent damage to the product due to lightning and power line surges
- **Installation.** Configuration and installation should only be carried out by a competent installation engineer
- **Cabling.** Using high quality wires, well protected. Make sure the cable integrity.



This symbol alerts you to the presence of dangerous voltage inside the closure – voltage which may be sufficient to constitute a risk of shock. Do not perform any servicing other than that contained in the operating instructions. Refer all servicing to qualified personnel



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



Do not change the voltage setting or replace the mains fuse without first turning the unit off and unplugging the mains cord



Make sure the AC main voltage corresponds to that indicated in the technical specifications.
THIS APPARATUS MUST BE EARTHED !



To avoid risk of fire use the correct value fuse, as indicated on the label stuck on the right side of the unit.



This apparatus uses a single pole mains switch and does therefore not separate the unit completely from the mains power. To completely separate from mains power (f.i. in the event of danger) unplug mains power cord. As the MAINS plug is the disconnect device, the disconnect device shall remain readily operable.

5 CONSIGNES DE SÉCURITÉ IMPORTANTES

- Lire ces consignes
- Conserver ces consignes
- Observer tous les avertissements
- Suivre toutes les consignes
- Ne pas utiliser cet appareil à proximité de l'eau
- Ne pas obstruer les ouvertures de ventilation. Installer en respectant les consignes du fabricant
- Ne pas installer à proximité d'une source de chaleur telle qu'un radiateur, une bouche de chaleur, un poêle ou d'autres appareils (dont les amplificateurs) produisant de la chaleur.
- Ne pas annuler la sécurité de la fiche de terre, la troisième branche est destinée à la sécurité. Si la fiche fournie ne s'adapte pas à la prise électrique, demander à un électricien de remplacer la prise hors normes.
- Protéger le cordon d'alimentation afin que personne ne marche dessus et que rien ne le pince, en particulier aux fiches, aux prises de courant et au point de sortie de l'appareil
- Utiliser uniquement les accessoires spécifiés par le fabricant
- Utiliser uniquement avec un chariot, un support ou une table spécifié par le fabricant ou vendu avec l'appareil. Si un chariot est utilisé, déplacer l'ensemble chariot-appareil avec précaution afin de ne pas le renverser, ce qui pourrait entraîner des blessures
- Débrancher l'appareil pendant les orages ou quand il ne sera pas utilisé pendant longtemps.
- Confier toute réparation à du personnel qualifié. Des réparations sont nécessaires si l'appareil est endommagé d'une façon quelconque, par exemple: cordon ou prise d'alimentation endommagé, liquide renversé ou objet tombé à l'intérieur de l'appareil, exposition de l'appareil à la pluie ou à l'humidité, appareil qui ne marche pas normalement ou que l'on a fait tomber.
- NE PAS exposer cet appareil aux égouttements et aux éclaboussures. Ne pas poser des objets contenant de l'eau, comme des vases, sur l'appareil



Ce symbole indique la présence d'une tension dangereuse dans l'appareil constituant un risque de choc électrique.



Ce symbole indique que la documentation fournie avec l'appareil contient des instructions d'utilisation et d'entretien importantes.



Avant de modifier le commutateur de changement de tension ou remplacer le fusible il faut débrancher l'appareil de la prise électrique. Pendant son usage, l'appareil doit être branché à la prise de terre



Utiliser le fusible principal AC avec la valeur qui est indiquée sur l'étiquette collée sur le coffret.



Assurez-vous que la tension principale AC correspond à celle indiquée dans les spécifications techniques.



L'interrupteur d'alimentation interrompt un pôle du réseau d'alimentation excepté le conducteur de terre de protection. En cas de danger, débrancher le cordon d'alimentation. Parce que la prise du réseau de alimentation est utilisée comme dispositif de déconnexion, ce dispositif doit demeurer aisément accessible

6 ISTRUZIONI IMPORTANTI PER LA SICUREZZA

- Leggere le presenti istruzioni
- Conservare queste istruzioni
- Osservare tutte le avvertenze
- Seguire scrupolosamente tutte le istruzioni
- Non usare questo apparecchio in prossimità di acqua
- Non ostruire alcuna apertura per il raffreddamento. Installare l'apparecchio seguendo le istruzioni
- Non installare l'apparecchio accanto a fonti di calore quali radiatori, aperture per l'afflusso di aria calda, forni o altri apparecchi (amplificatori inclusi) che generino calore
- Non rimuovere il terminale di connessione a terra sul cordone di alimentazione: esso ha lo scopo di tutelare l'incolumità dell'utilizzatore. Se la spina in dotazione non si adatta alla presa di corrente, rivolgersi ad un elettricista per far eseguire le modifiche necessarie.
- Evitare di calpestare il cavo di alimentazione o di comprimerlo, specialmente in corrispondenza della spina e del punto di inserzione sull'apparato.
- Utilizzare solo dispositivi di collegamento e gli accessori specificati dal produttore.
- Utilizzare l'apparecchio solo con un carrello, un sostegno, una staffa o un tavolo di tipo specificato dal produttore o venduto insieme all'apparecchio. Se si utilizza un carrello, fare attenzione negli spostamenti per evitare infortuni causati da ribaltamenti del carrello stesso.
- Scollegare l'apparecchio dalla presa di corrente durante i temporali o quando inutilizzato a lungo
- Per qualsiasi intervento, rivolgersi a personale di assistenza qualificato. È necessario intervenire sull'apparecchio ogniqualvolta si verificano danneggiamenti di qualsiasi natura. Ad esempio, la spina o il cavo di alimentazione sono danneggiati, è entrato liquido nell'apparecchio o sono caduti oggetti su di esso, l'apparecchio è stato esposto alla pioggia o all'umidità, non funziona normalmente o è caduto.
- Non esporre a sgocciolamenti o spruzzi. Non appoggiare sull'apparecchio oggetti pieni di liquidi, ad esempio vasi da fiori.



Questo simbolo indica la presenza di alta tensione all'interno dell'apparecchio, che comporta rischi di scossa elettrica.



Questo simbolo indica la presenza di istruzioni importanti per l'uso e la manutenzione nella documentazione in dotazione all'apparecchio.



Non sostituire il fusibile o cambiare la tensione di alimentazione senza aver prima scollegato il cordone di alimentazione. L'APPARATO DEVE ESSERE CONNESSO A TERRA.



Sostituire il fusibile generale con uno di identico valore, come indicato sulla etichetta applicata sul mobile dell'apparato



Assicurarsi che la tensione di rete corrisponda a quella per la quale è configurato l'apparecchio



Questo apparato utilizza un interruttore di alimentazione di tipo unipolare e l'isolamento dalla rete elettrica non è pertanto completo. Per ottenere un isolamento totale (ad esempio in caso di pericolo), scollegare il cordone di alimentazione. Inoltre, poiché la spina di alimentazione è utilizzata come dispositivo di sezionamento, essa deve restare facilmente raggiungibile

7 WICHTIGE SICHERHEITSHINWEISE

- Diese Hinweise **LESEN**
- Diese Hinweise **AUFHEBEN**
- Alle Warnhinweise **BEACHTEN**
- Alle Anweisungen **BEFOLGEN**
- Dieses Gerät **NICHT** in der Nähe von Wasser verwenden
- **KEINE** Lüftungsöffnungen verdecken. Gemäß den Anweisungen des Herstellers einbauen
- **Nicht in der Nähe von Wärmequellen**, wie Heizkörpern, Raumheizungen, Herden oder anderen Geräten (einschließlich Verstärkern) installieren, die Wärme erzeugen
- **Die Schutzfunktion des Schukosteckers NICHT umgehen.** Bei Steckern für die USA gibt es polarisierte Stecker, bei denen ein Leiter breiter als der andere ist; US-Stecker mit Erdung verfügen über einen dritten Schutzleiter. Bei diesen Steckerausführungen dient der breitere Leiter bzw. der Schutzleiter Ihrer Sicherheit. Wenn der mitgelieferte Stecker nicht in die Steckdose passt, einen Elektriker mit dem Austauschen der veralteten Steckdose beauftragen
- **VERHINDERN, dass das Netzkabel gequetscht oder darauf getreten wird**, insbesondere im Bereich der Stecker, Netzsteckdosen und an der Austrittsstelle vom Gerät
- **NUR das vom Hersteller angegebene Zubehör** und entsprechende Zusatzgeräte verwenden.
- **NUR in Verbindung** mit einem vom Hersteller angegebenen oder mit dem Gerät verkauften Transportwagen, Stand, Stativ, Träger oder Tisch verwenden. Wenn ein Transportwagen verwendet wird, beim Verschieben der Transportwagen-Geräte- Einheit vorsichtig vorgehen, um Verletzungen durch Umkippen
- **Das Netzkabel dieses Geräts** während Gewittern oder bei längeren Stillstandszeiten aus der Steckdose **ABZIEHEN**.
- **Alle Reparatur- und Wartungsarbeiten** von qualifiziertem Kundendienstpersonal **DURCHFÜHREN LASSEN**. Kundendienst ist erforderlich, wenn das Gerät auf irgendeine Weise beschädigt wurde, z.B. wenn das Netzkabel oder der Netzstecker beschädigt wurden, wenn Flüssigkeiten in das Gerät verschüttet wurden oder Fremdkörper hineinfließen, wenn das Gerät Regen oder Feuchtigkeit ausgesetzt war, nicht normal funktioniert oder fallen gelassen wurde.
- **Dieses Gerät vor Tropf- und Spritzwasser SCHÜTZEN.** KEINE mit Wasser gefüllten Gegenstände wie zum Beispiel Vasen auf das Gerät **STELLEN**.



Dieses Symbol zeigt an, dass gefährliche Spannungswerte, die ein Stromschlagrisiko darstellen, innerhalb dieses Geräts auftreten.



Dieses Symbol zeigt an, dass das diesem Gerät beiliegende Handbuch wichtige Betriebs- und Wartungsanweisungen enthält.



Vor Änderung der Netzspannung oder Sicherungswechsel Netzkabel trennen.
Das Gerät muss für den Betrieb geerdet werden.



Hauptsicherung nur mit einer gleichwertigen austauschen
(s. entsprechende Etikette).



Vor Einschalten Netzspannungseinstellung am Gerät überprüfen bzw. anpassen.



Inpoliger Netzschalter. In Notfälle oder für Wartungsarbeiten Netzkabel trennen. Der Netzstecker fungiert auch als Trennelement muss deshalb zugänglich bleiben

8 INSTRUCCIONES IMPORTANTES DE SEGURIDAD

- **LEA** estas instrucciones
- **CONSERVE** estas instrucciones
- **PRESTE ATENCION** a todas las advertencias.
- **SIGA** todas las instrucciones
- **NO** utilice este aparato cerca del agua
- **NO obstruya ninguna de las aberturas de ventilación.** Instálese según lo indicado en las instrucciones del fabricante
- **No instale el aparato cerca de fuentes de calor** tales como radiadores, registros de calefacción, estufas u otros aparatos (incluyendo amplificadores) que produzcan calor
- **NO anule la función de seguridad del enchufe polarizado** o con clavija de puesta a tierra. Un enchufe polarizado tiene dos patas, una más ancha que la otra. Un enchufe con puesta a tierra tiene dos patas y una tercera clavija con puesta a tierra. La pata más ancha o la tercera clavija se proporciona para su seguridad. Si el toma corriente no es del tipo apropiado para el enchufe, consulte a un electricista para que sustituya el toma corriente de estilo anticuado
- **PROTEJA el cable eléctrico** para evitar que personas lo pisen o estrujen, particularmente en sus enchufes, en los toma corrientes y en el punto en el cual sale del aparato
- **UTILICE únicamente los accesorios especificados por el fabricante**
- **UTILICESE únicamente** con un carro, pedestal, escuadra o mesa del tipo especificado por el fabricante o vendido con el aparato. Si se usa un carro, el mismo debe moverse con sumo cuidado para evitar que se vuelque con el aparato
- **DESENCHUFE el aparato** durante las tormentas eléctricas, o si no va a ser utilizado por un lapso prolongado.
- **TODA reparación** debe ser llevada a cabo por técnicos calificados. El aparato requiere reparación si ha sufrido cualquier tipo de daño, incluyendo los daños al cordón o enchufe eléctrico, si se derrama líquido sobre el aparato o si caen objetos en su interior, si ha sido expuesto a la lluvia o la humedad, si no funciona de modo normal, o si se ha caído.
- **NO exponga** este aparato a chorros o salpicaduras de líquidos. NO coloque objetos llenos con líquido, tales como floreros, sobre el aparato .



Este símbolo indica que la unidad contiene niveles de voltaje peligrosos que representan un riesgo de choques eléctricos.



Este símbolo indica que la literatura que acompaña a esta unidad contiene instrucciones importantes de funcionamiento y mantenimiento.



Antes de cambiar la alimentación de voltaje o de cambiar el fusible, desconecte el cable de alimentación. Para reducir el riesgo de descargas eléctricas, esta unidad debe ser conectada a tierra.



Remplaze el fusible con lo mismo, que corresponde a lo indicado en el panel del equipo.



Antes de encender, controlar que la línea de alimentación de voltaje corresponda a la indicada



El interruptor de alimentación es unipolar. En el caso de peligro, desconecte el cable de alimentación. Porque la clavija de conexión a red sirve por la desconexión de la unidad, la clavija debe ser ubicada en proximidad de la unidad

9 UNPACKING AND INSPECTION

Your equipment was packed carefully at the factory in a container designed to protect the unit during shipment. Nevertheless, we recommend making a careful inspection of the shipping carton and the contents for any signs of physical damage.

Damage & Claims

If damage is evident, do not discard the container or packing material. Contact your carrier immediately to file a claim for damages. Customarily, the carrier requires you, the consignee, to make all damage claims. It will be helpful to retain the shipping documents and the waybill number.

Save all packing materials! If You should ever have to ship the unit (e.g. for servicing), it is best to ship it in the original carton with its packing materials because both the carton and packing material have been carefully designed to protect the unit.

Under normal conditions no user maintenance or calibration are required. Internal links and preset controls may be set to configure the unit during installation. **Any service work required should be carried out by qualified service personnel only.**

We are able to offer further product support through our worldwide network of approved dealers and service agents.



To help us provide the most efficient service please would you keep a record of the unit serial number, and date and place of purchase to be quoted in any communication regarding this product.

The actual equipment Serial Number is indicated on the silver label stuck on the rear panel of the equipment closure.



Tools And Equipment Needed

Only standard technician's tools are required to install this equipment.

10 FIRST INSTALLATION RECOMMENDATIONS

10.1 POWER SUPPLY CABLE

A power supply cable of approx. 2 mt length is supplied with the device, which has a moulded IEC plug attached – this is a legal requirement.

The type of plug for the power supply depends on the country in which it is delivered.

If for any reason, you need to use this appliance with a different plug, you should use the following wiring guidelines in replacing the existing plug with the new one:

Earth	Green, or green and yellow
Neutral (N)	Blue
Live (L)	Brown

Supply cables should be laid in such a manner that one does not step or walk on them. They should not be squashed by any objects.

THIS EQUIPMENT MUST BE EARTHED.

The chassis is always connected to mains earth to ensure your safety: check your mains wiring and earthing before switching on.

10.2 AC MAINS VOLTAGE SETTING (230 V / 115 V)



BE SURE THAT THE UNIT IS SET TO THE CORRECT MAINS/LINE VOLTAGE FOR YOUR COUNTRY BEFORE PLUGGING IT INTO THE WALL OUTLET !

The actual Mains voltage is indicated on the label stuck on the equipment closure. Should the type of power at the operation location not be known, please contact your dealer or electricity company.



If, for some reason, the unit is to be operated at a mains input voltage which is different to that as supplied, you need to switch the voltage selector on the right side of the unit. You also need to replace the AC main fuse, according to information provided on the external label or on the Technical Specifications table at the end of this user manual.



CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, ALWAYS DISCONNECT THE AC MAINS CABLE BEFORE ALTERING THE CHANGE-OVER SWITCH. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

10.3 FUSE REPLACEMENT

The power supply socket has an integral fuse drawer containing the AC power fuse and a spare, both of the same value.



BEFORE REPLACING THE POWER FUSE, MAKE SURE YOU HAVE THE RIGHT TYPE OF FUSE FOR THE VOLTAGE TO BE PROTECTED.
USING WRONG FUSE TYPE WILL RESULT IN INSUFFICIENT PROTECTION.

Make sure that the power is switched off and the power cable is disconnected from the equipment.

- a. Open the fuse drawer using a small blade screwdriver.



- b. Replace the fuse located at the internal position



- c. Push the fuse socket back into the original position (a.)



Perform the set-up under static control conditions. Static charges are likely to completely destroy one or more of the CMOS semiconductors employed in the unit. Static damage will not be covered under warranty.

Basic damage prevention consists of minimizing generation, discharging any accumulated static charge on your body and preventing that discharge from being sent to or through any electronic component.



Uninsulated dangerous voltage are inside the enclosure, voltage that may be sufficient to constitute a risk of shock.

Always disconnect to AC Mains before removing the top cover

10.4 PROTECTION AGAINST LIGHTNING



Should the device be put out of action due to being struck by lightning or excess voltage, disconnect it from the power supply without delay. Do not reconnect until the device has been checked. If in doubt contact the technical support service.

Make sure there is suitable lightning protection to protect the device.

Alternatively you should disconnect all connectors from the device during a storm or when the device is going to be unsupervised or not used for a longer period of time.

These measures will protect against damage by lightning or excess voltage.

10.5 VENTILATION

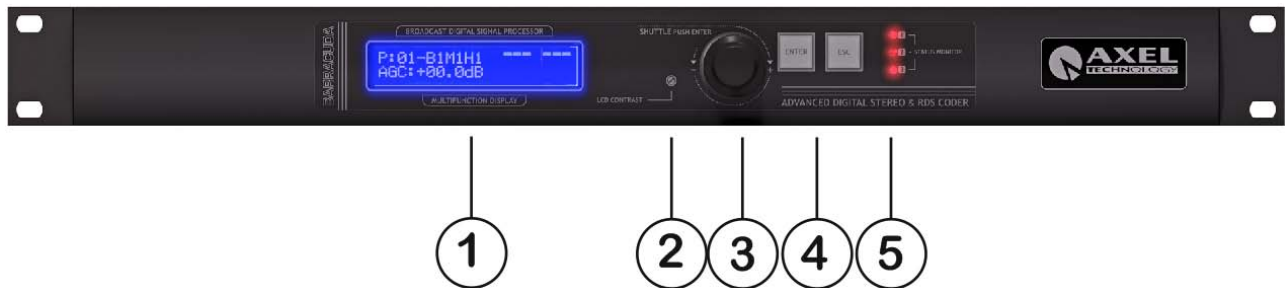
The equipment will operate as a free-standing unit without requiring any special cooling arrangement.

However, slots and openings in the product are provided for ventilation. They ensure reliable operation of the product, keeping it from overheating. These openings must not be blocked nor covered during operation.

YOU MUST LEAVE AT A MINIMUM ONE RACK UNIT OF EMPTY SPACE ABOVE THE EQUIPMENT TO ENHANCE VENTILATION AND TO GET A LONGER EQUIPMENT LIFE.

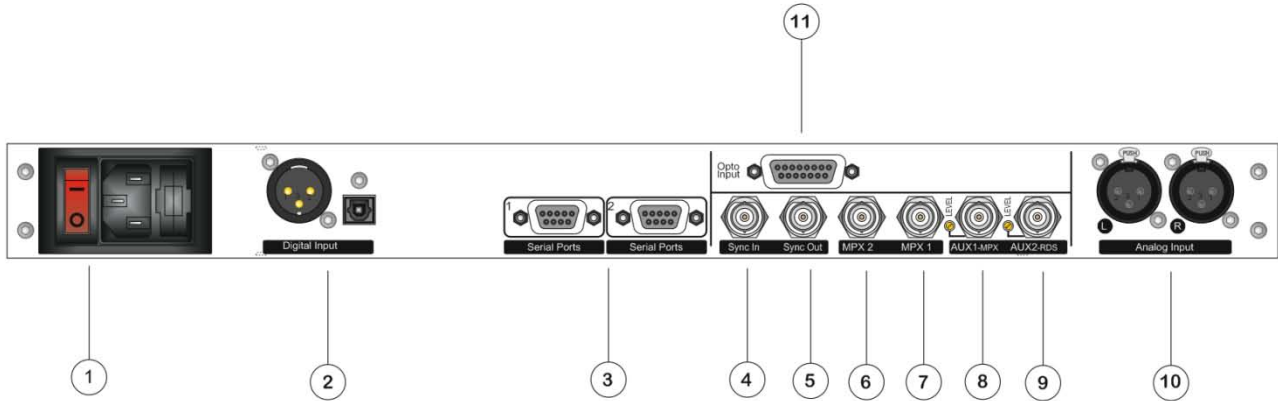
11 GENERAL DESCRIPTION

11.1 FRONT PANEL



N°	Name	Description
1	DISPLAY	Multifunction display showing the menu and the unit status
2	LCD CONTRAST	Trimmer setting to regulates the LCD Contrast
3	JOG-SHUTTLE:	For menu navigation and parameters modify. If it is pressed it has the same function as the [ENT] button (4)
4	[ENT] & [ESC]	[ENTER] by pressing this button, selection shown on the Display is confirmed [ESC] by pressing this button, selection shown on the Display is discarded
5	Led Status Monitor	3 Different purpose Red Led show the Barracuda Status. <ul style="list-style-type: none"> - Led 1: Clipping Point - Led 2: User Definable - Led 3: User Definable

11.2 REAR PANEL



N°	Name	Description
1	MAIN AC SWITCH	The Barracuda uses a power entry module with AC switch just next to the IEC power cord receptacle. It can operate on 110 or 240 VAC, 50/60 Hz AC mains voltages. If the unit is to be used with a mains voltage different to that for which the unit is supplied, set the voltage change-over switch, which is placed inside the box, closed to the AC transformer. The power supply socket has an integral fuse drawer containing the AC power fuse and a spare, both of the same value (500 mA, for 230 and 110 Volts)..
2	DIGITAL AUDIO INPUT (optional)	It is based on two connectors: a transformer balanced XLR-type connector for AES-EBU signals and an optic connector (TOS-LINK) for fiber-optic, consumer sources. The digital input accepts any sampling rate between 32 and 96 kHz. No user adjustment is necessary since a sample rate converter is built into the unit. Furthermore, digital input automatically recognizes the digital format and the type of connection (optic or coaxial).
3	SERIAL PORTS	Barracuda features up to four <u>optoinsulated</u> RS232 serial ports (port 3 and 4 are available as an <u>option</u>) which allow the remote control and RDS programming both through local - or remote PCs running the PC Smart Coder Remoter, UECP programmer, etc. As stated in the UECP protocol, main parameters (access rights, speed, etc) for Ports 1 & 2.
	Port 1 (female DB9 connector)	Port for managing and control Barracuda n°1. This is the only port available for Firmware update and for connection to an external 56 Kbps dial-up modem (for remote control of Barracuda through POTS telephone lines). The Baud Rate can be set to 2400, 4800, 9600, 19200, 38400 Baud from the Front Panel menu.
	Port 2 (female DB9 connector)	Port for managing and control Barracuda n°2. Port Baud Rate can be set to 2400, 4800, 9600, 19200, 38400 Baud from the Front Panel menu. The same port may be also set as 'Port 1 Mirror' to enable chain connection of multiple Barracuda units. The Mirror mode operates in a Monodirectional way (i.e. data received from Port 1 are forwarded to Serial Port 2 output but vice versa is not true). See Front Panel menu for settings.
4	SYNC-IN INPUT	DISABLED and UNAVAILABLE

5	SYNC-OUT OUTPUT	This TTL-level (5Vpp) 19 kHz square wave output can be used as the reference signal for any SCA generator that operates at 57 kHz or other multiple of the 19 kHz pilot frequency. Using the 19 kHz clock from the Shark makes it much easier to phase lock the external signal to the pilot frequency. This is extremely helpful in order to remove intermodulation components. For RDS coders, this feature is also very useful. The <u>Sync Output is disabled</u> by default (see par. Output Sync in the MPX menu).
6	SECONDARY MPX 'OUTPUT' (MPX 2)	It replicates, through an independent 'buffer', the same MPX signal available on MPX Output 1. Proper load impedance is 50 Ohms.
7	MAIN 'OUTPUT' (MPX 1)	This is the Main MPX and/or RBDS/RDS (with or without signals injected from Aux 1 and 2 mixed into). You can adjust the <u>overall</u> output level through the menu (<i>MPX Level</i> control in the MPX MODULE SETUP page) in the - 9 dBm to +15dBm range. Factory preset: 0 dBm (2.2 Vpp). This output can provide a reference tone consisting of a 500 Hz / 0 dBm sinusoidal signal. This tone corresponds to the maximum frequency deviation. To enable it, see Peak Ref Tone in MPX Module Setup / Output Mode menu.
8	AUXILIARY INPUT 'AUX IN 1-MPX'	The AUX-1 inputs allow the Mpx, SCA, RDS injection from external coders. The resultant signal (f.i. external RDS+ auto-generated MPX) is available on the Output connector. The level of the injected signal may be adjusted by means of the trimmer next to the corresponding BNC connector (<u>no software control is provided</u> for this purpose). This trimmer is factory preset for a gain of 0 dB. In the RDS-only version, You may use this input to inject an external MPX signal or a Pilot tone 19 KHz as a reference for RDS generation. To enable this input, see MPX block Diagram and Jumper J3 setting. NOTE: When using an external RDS encoder, the internal RDS one must be disabled. Suggested RDS injection level is -31.5 dBm (\approx 60mVpp / 2.0 kHz deviation) in relation to an MPX output of 0 dBm (<u>2.2 Vpp, 0.776 Vrms</u>). AUX Input impedance is 10 KOhm. This is the input for <u>Splitting Option</u>
9	AUXILIARY INPUT 'AUX IN 2-RDS'	The AUX-2 inputs allow the SCA, RDS injection from external coders. The resultant signal (f.i. external RDS+ auto-generated MPX) is available on the Output connector. The level of the injected signal may be adjusted by means of the trimmer next to the corresponding BNC connector (<u>no software control is provided</u> for this purpose). This trimmer is factory preset for a gain of 0 dB. In the RDS-only version, You may use this input to inject an external MPX signal or a Pilot tone 19 KHz as a reference for RDS generation. To enable this input, see MPX block Diagram and Jumper J3 setting. NOTE: When using an external RDS encoder, the internal RDS one must be disabled. Suggested RDS injection level is -31.5 dBm (\approx 60mVpp / 2.0 kHz deviation) in relation to an MPX output of 0 dBm (<u>2.2 Vpp, 0.776 Vrms</u>). AUX-2 Input impedance is 10 KOhm.
10	ANALOG AUDIO INPUT	Balanced XLR-type connectors are used for input analog audio. The stereo analog inputs are designed for standard 0 dBu balanced signals. Individual channel gain and level setting is done using the software parameter settings (see INPUT CALIBRATION menu). In case of unbalanced connections, please connect the cold pole (Pin 3) to the ground (Pin 1). Factory preset input impedance is 10 kOhm. This impedance may also be set to 600Ohm by moving the two internal jumpers on the INPUT board (see Chapter 17- hardware settings).

11	OPTO PORT	15-pin female Interface connector provides 5 optoinsulated “trigger” inputs. These inputs can be used to dynamically alter the Barracuda operational attributes (f.i. some RDS flags, as TA, M/S,etc) in response to logic signal transitions. All the inputs can be assignable (See revealent Chapter for details)
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11.3 THE INTERNAL CLOCK

Equipment internal **Clock** is powered by a **SuperCAP (capacitor)** instead of a traditional battery. The capacitor keeps the clock operating and protects the system memory to prevent the loss of stored programs during power failure around one week long (depending on the environmental conditions).

Capacity charge needs at least 30' of normal operation.

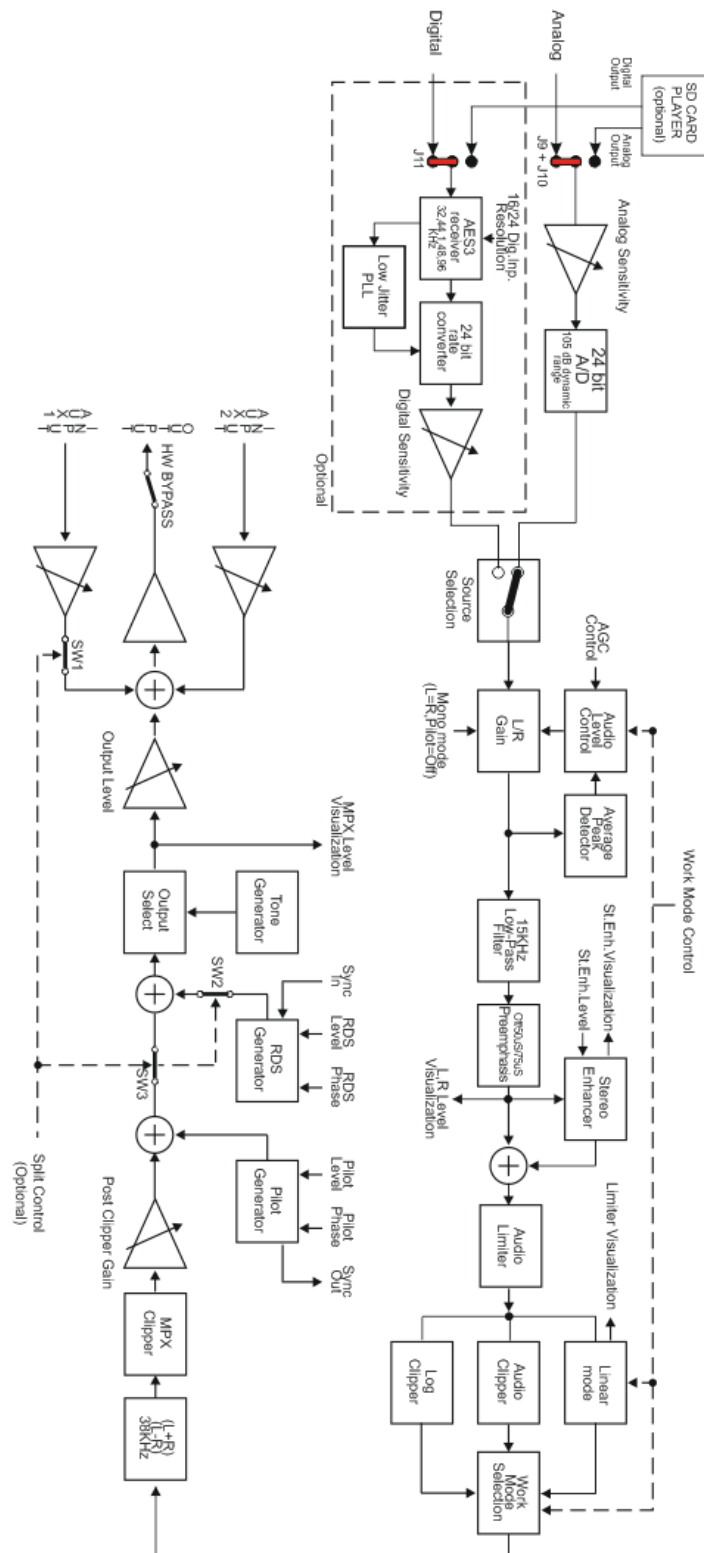
RDS parameters and relevant settings are stored on a non-volatile memory (in order to save data integrity even in the event the coder is not used for long periods).

Clock tolerance might amount to about 1 sec per day (it strictly depends on environment conditions).

In the event the SuperCap gets completely discharged, the clock will stop and You **will always need** to synchronize it again to the Pc clock using the Smart Coder Remoter /General Settings window).

Scheduler tool for RDS services stops when internal clock is freezing.

12 BARRACUDA BLOCK DIAGRAM



13 FRONT PANEL OPERATION

As already mentioned, the user interface consists of a front panel-mounted jog-wheel, two buttons and an LCD screen. The LCD screen displays menus, parameter settings and several bargraphs (Level Meters or processing activity).



The menus are used for the processing parameters adjustment.

Rotating the jog-wheel lets you browse up or down through menus and parameter choices.

Pressing the jog-wheel (called "clicking") selects the blinking menu item or parameter choice. When editing the parameter values, rotating the jog-wheel adjusts the parameter's value up (by rotating CW) or down (CCW).

Once the desired value is reached, clicking the jog-wheel twice saves the value and returns the display to the upper menu level. You can return to the upper menu without saving by pressing the *Quit* key or by choosing the 'quit' option.

Thus pressing (or clicking) the jog-wheel serves, depending upon the LCD screen status, as an Enter, Select or Return command.

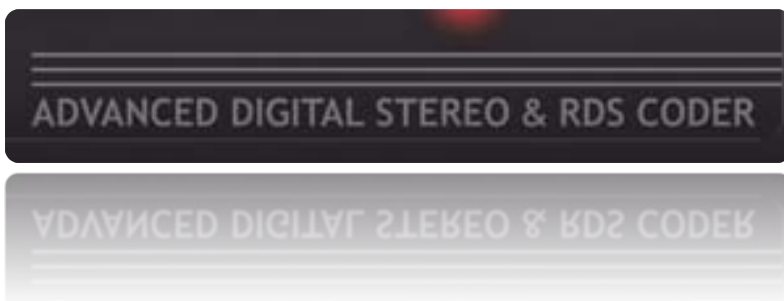
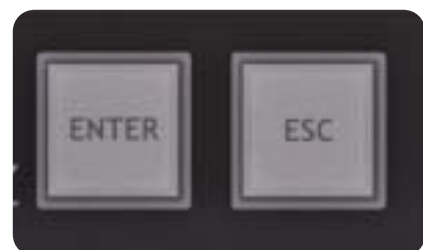
Please note that when a new value is only displayed – even blinking – it is immediately loaded into the equipment processing so that the user can get a real time response.

NOTE: The front panel menu allows only RDS signal level and phase setting. RDS messages programming and all the other related facilities requires the supplied Pc control software – see Revealnt chapter.

Enter function is achieved by pressing 'Enter' button, too.

Quit/Return function is achieved by pressing 'Quit' button, too.

Any access to the Barracuda menu via the front panel keys can be blocked



13.1 THE MENU TREE



The menu tree is shown on the next pages.

It has all twelve of the possible main menu items listed along the left side.

The branching sub-menus and parameters are connected in the order they are encountered in the menu system.

To save the changes, firstly press *Enter* to get the *Save* function and then a second time to confirm

Press *Quit* to escape the menu without saving and get the upper menu level

Press *Quit* to get the upper menu level.

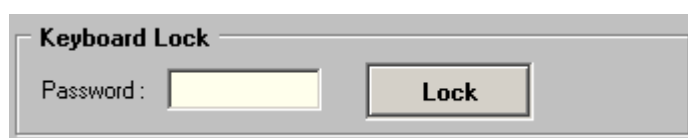


- |-- MAIN PAGE (*Time expressed in Hours and Minutes; Date expressed DD-MMM-YYYY*)
- |-- RDS Monitor Page (*DataSet, PSN Active, RADIO TEXT Active, PTY Active*)
- |-- INPUT Monitor Page (*L / R Audio Input Levels*)
- |-- MPX Monitor Page (*MPX Signal Level*)
- |-- LIMITER Monitor Page (*AGC Level + LIMITER type*)
- |-- Input Module Setup --
 - |-- Right Gain -- +/-12 dB (0.1 dB step)
 - |-- Left Gain -- +/-12 dB (0.1 dB step)
 - |-- Analog Sens. -- 15 dBm to - 9 dBm (0.1 dB step)
 - |-- Digital Sens. -- 0 dBfs to - 24 dBfs (0.1 dB step)
 - |-- Signal Input -- Analogic / Digital / MPX
 - |-- Resolution -- 16 / 24 Bits Resolution
 - |-- Post (Clipper) Gain -- - 6 dB to + 6 dB (0.1 dB step)
- |-- Mpx Module Setup --
 - |-- Pilot Level -- Off / - 25 dB to - 15.5 dB (0.1 dB step)
 - |-- Pilot Phase -- - 12 Deg to + 12 Deg (1 Deg step)
 - |-- Preemphasis -- Preemphasis Off / 50 uSec / 75 uSec
 - |-- Mpx Level -- - 9 dBm to + 15dBm (0.1 dB step)
 - |-- Output Mode -- Normal / Peak Reference Tone
 - |-- Mpx mode -- Normal (Stereo) / Mono (Left Input)
 - |-- Output Sync -- Output Sync Enabled / Disabled
- |-- Rds Module Setup --
 - |-- Rds Level -- Off / - 43.9 dB to - 20.0 dB (0.1dB step)
[0 to 1.2 Vpp, 5 mVpp step]*
 - |-- Rds On/Off -- Rds Signal On / Rds Signal Off
 - |-- Rds Phase -- - 120 Deg to + 120 Deg (1 Deg step)
 - |-- Rds Sync* -- Internal / External (Auto)
 - |-- Rds Mode -- Uecp Standard / Custom Uecp Extended
 - |-- Rds On Aux -- Rds disabled / Rds enabled

--	Limiter Module Setup	--	--	Work Mode	--	Linear Mode (Manual) / Linear Full Range (Man) /
					--	Lin Full Range (Man)
					--	Clipper Mpx (Manual)
--	Data Port 1 Setup	--	--	Port	--	Port Enabled / Disabled
			--	Baud Rate	--	2400 / 4800 / 9600 / 19200 / 38400 Baud rate
			--	Link Mode	--	Unidirectional / Bidirectional Auto / Bidirectional Req
--	Data Port 2 Setup	--	--	Serial Port	--	Port Enabled / Disabled
			--	Baud Rate	--	2400 / 4800 / 9600 / 19200 / 38400 Baud rate **
			--	Link Mode	--	Unidirectional / Bidirectional
--	Data Port 3 Setup	--	--	Serial Port	--	Port Enabled / Disabled
			--	Link Mode	--	Unidirectional / Bidirectional
--	System Information		--	Ind. Address		Site Address, Encoder Address
			--	Temperature		Temperature
			--	Ext Inputs		IN1 (O/1), IN2 (O/1), IN3 (O/1), IN4 (O/1), IN5 (O/1)
			--	FW Version		Firmware version
			--	FW Code		Firmware code (13 alphanumeric characters)
			--	Tcp / Ip Addr.		Tcp / Ip address (IP address)
			--	Tcp / Ip Port		Tcp / Ip Port
			--	Tcp / Ip S.Mask		Tcp / Ip SubNet Mask
			--	IP Gateway		Gateway IP Address

WARNING! Baud Rate set for PC serial ports in the Smart Coder Software must match the one set for the corresponding Serial Port on the Barracuda. For example, if the serial port 1 runs at 4800 Baud, the same Rate must be chosen for the Smart Coder Software communication through Pc serial ports.

13.2 HOW TO PREVENT THE ACCESS FROM THE FRONT PANEL MENU



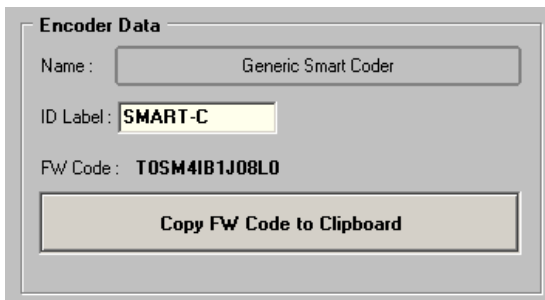
The 'Keyboard Lock' option (in the Barrauda Smart Coder Remoter 'Settings' window) allows you to block any access to the menu via the front panel.

Locking/unlocking can only take place via control software, by entering the password in the space

provided in the Setup window. To activate the lock function, type a password and then click on the corresponding button next to it (Lock). You may remove the connection to the PC. To unlock the panel, **type the same password**, and then click on Unlock. Note: the password may be changed during each access.

The 'keyboard lock' facility is available only when accessing the unit in a bidirectional mode.

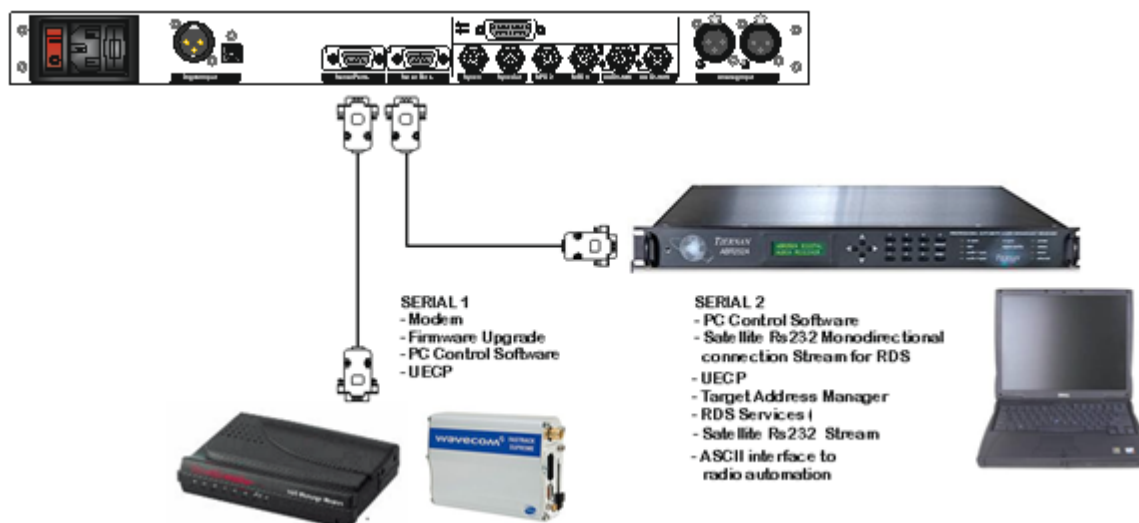
13.3 HOW TO ASSIGN AN ID LABEL TO THE UNIT



The image shows a software panel titled "Encoder Data". It contains three text input fields: "Name" with the value "Generic Smart Coder", "ID Label" with the value "SMART-C", and "FW Code" with the value "T0SM4IB1J08L0". Below these fields is a button labeled "Copy FW Code to Clipboard".

In the Settings panel there is an ID label for the connected target (not to be confused with the target name). It is editable both from the field pointed in figure (GENERAL SETTINGS PAGE) and from the Configuration Editor (in [GENERAL_SETTINGS] section) and shown on the front display.

14 SUMMARY OF AVAILABLE CONNECTIONS FOR CONTROL



SERIAL-1:

- Modem PSTN o GSM/GPRS Connection
- Firmware Upgrade Connection
- Smart Coder Remoter Connection Software
- UECP Stream MonoDirectional

SERIAL-2:

- Smart Coder Remoter Connection
- UECP Stream BiDirectional
- UECP Stream MonoDirectional
- Ascii Interface

15 INSTALLATION AND USE OF PC CONTROL SOFTWARE

15.1 INTRODUCTION

The **Smart Coder Remoter** is a powerful and reliable software running on Microsoft Windows® 2000 Professional and XP, Vista, Seven platforms and specially conceived for equipment remote/direct programming and control.

15.2 SOFTWARE INSTALLATION PROCEDURE

MAKE SURE A BARRACUDA REMOTER (Smart Coder Remoter) PROGRAM IS NOT ALREADY INSTALLED on Your computer.



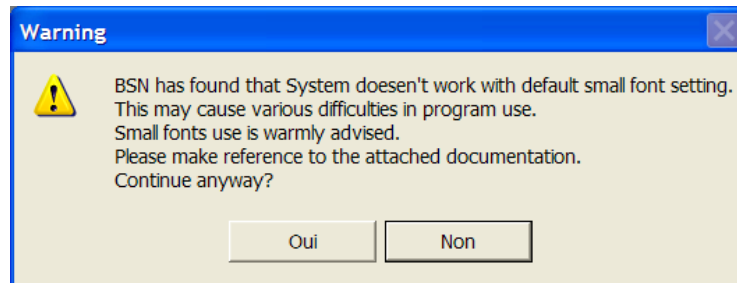
When upgrading the firmware, do not forget to install the new associated software version of PC remote control. There is a direct correspondence between the firmware and software versions.

For example, the rel. 3.0 of Pc software requires the firmware version 3.0 installed on the unit and vice versa. More precisely, the two first digits must match, as possible sub-releases (identified by the third digit) are not involved in the firmware/software compatibility.

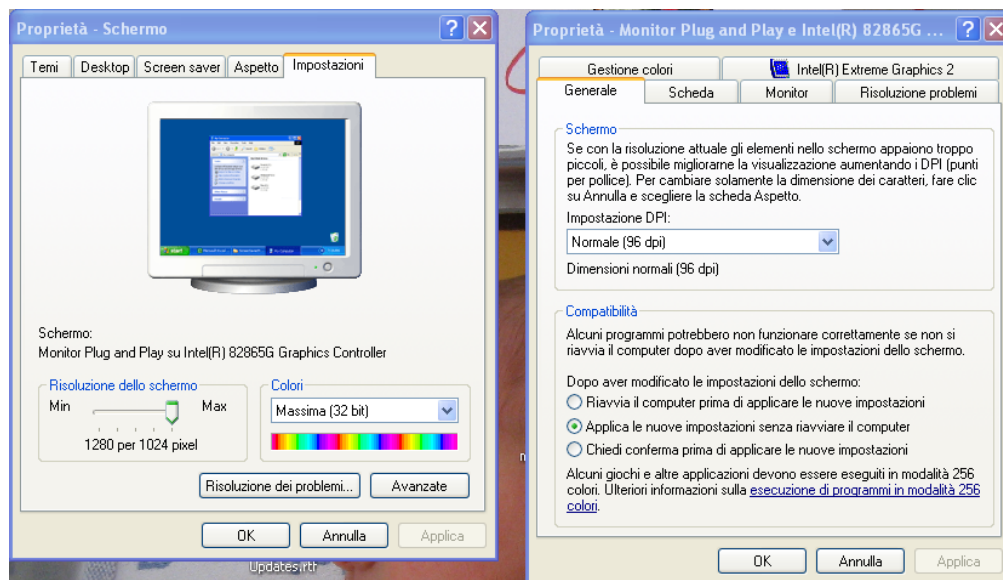
As general rule, software version X.Y.Z runs with firmware version X.Y.K

BARRACUDA REMOTER (Smart Coder Remoter) software runs on operative System that get a Monitor resolution fixed of 96 dpi (as default) and need some System font like: MS Serif, MS Sans Serif, Courier New, Small Fonts. All that needing are for reading correctly the single elements in the software.

IF some condition are not allowed a warning is showed by the Barracuda Remoter

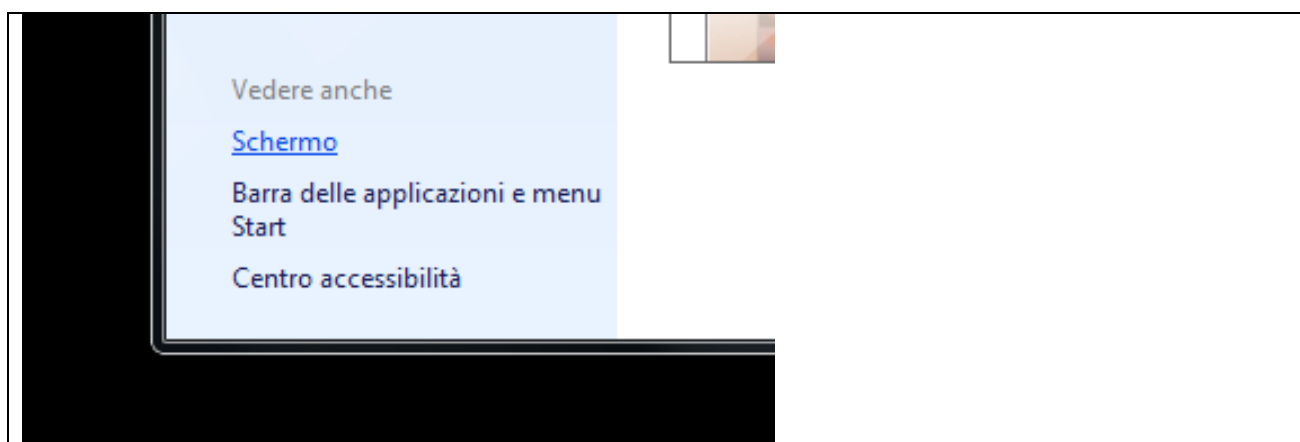


In Windows Xp that problem can be solved saving screen settings in Start -> Settings -> Control Panel -> Screen -> Settings -> Advanced (new window) -> General -> DPI Settings and set as "Normal 96Dpi"

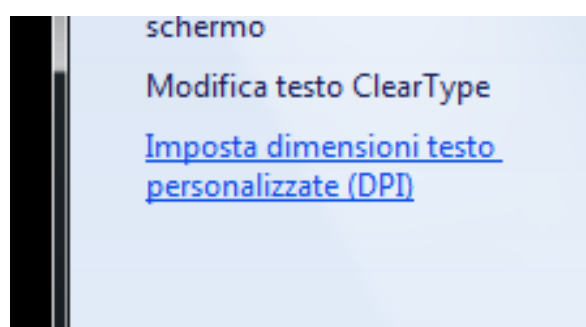


In Windows 7 that problem can be solved in that way:

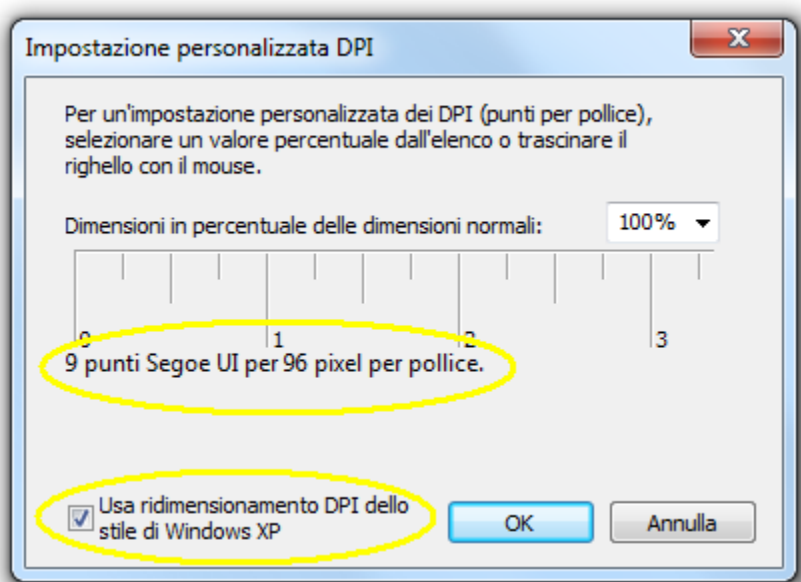
- Left mouse button on desktop
- Select "Custom"
- Select "Screen Settings"



- "DPI Settings"



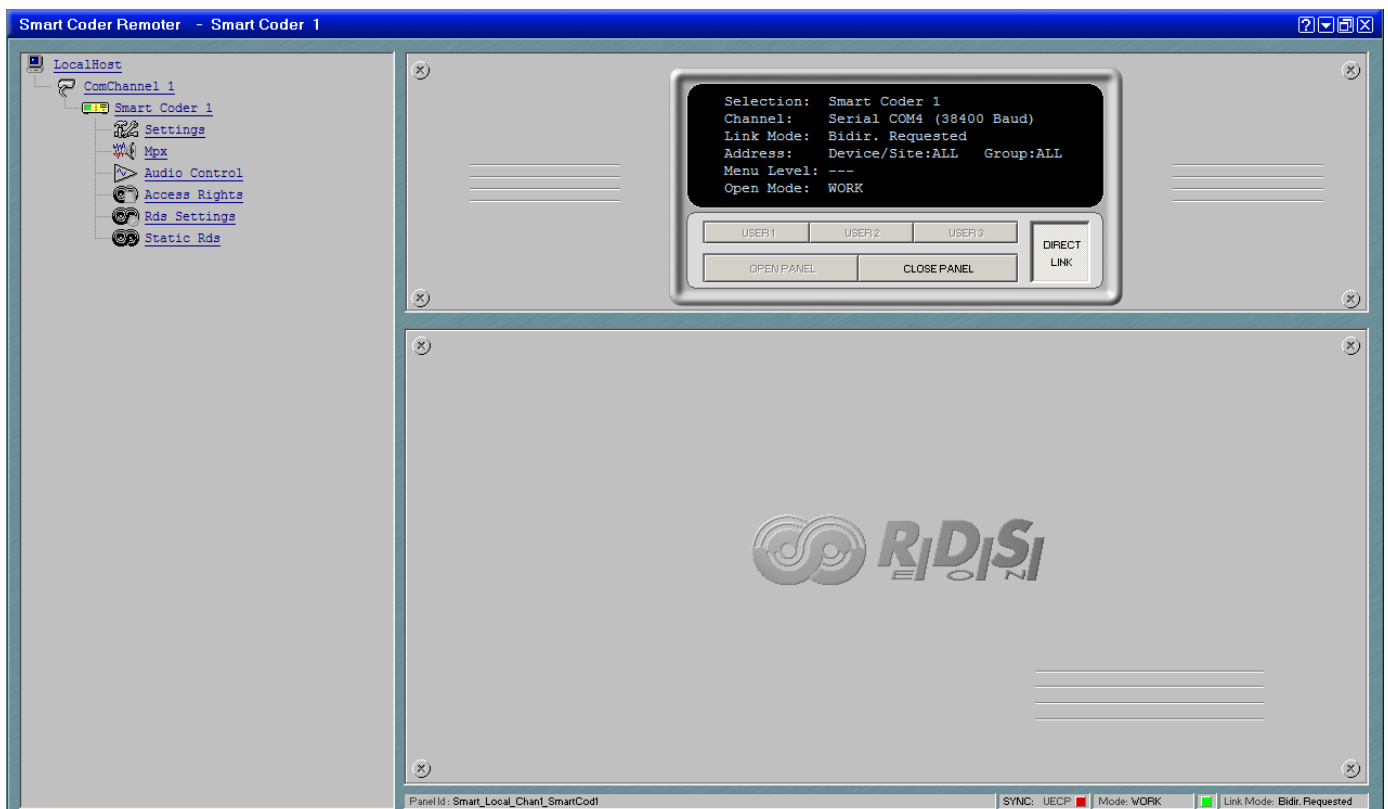
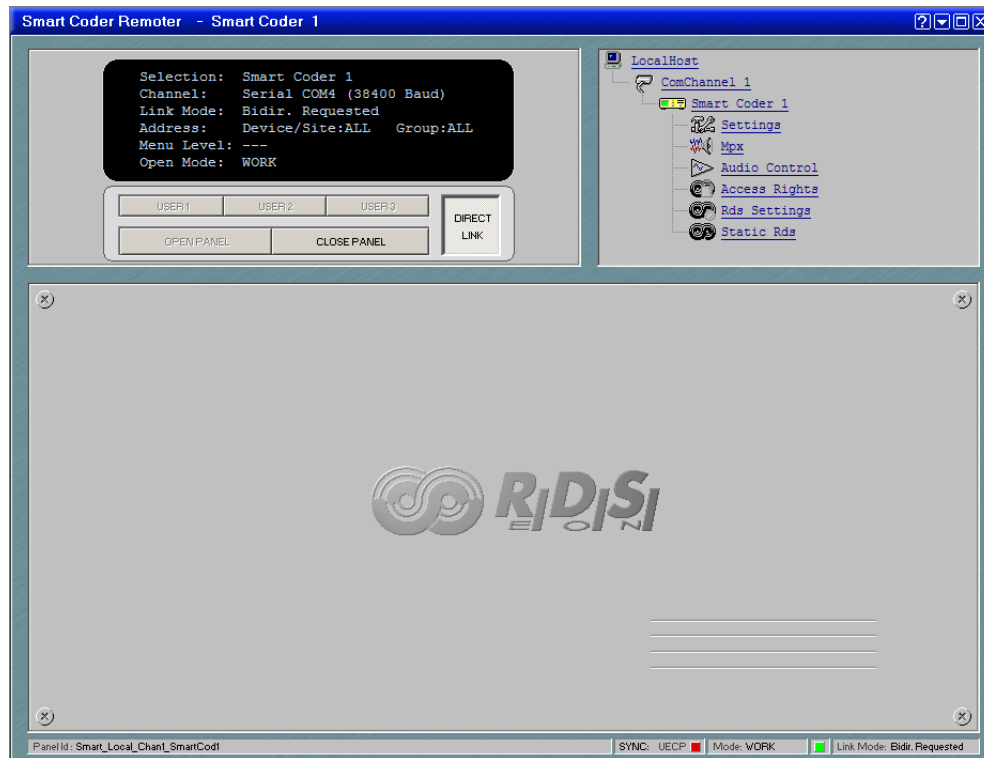
- Check that "9 Segoe Point UI each 96 pixel / inch" is selected
- Flag "Use Windows Xp DPI resizing"
- Save pressing OK



- Stop all the applications currently running on the Pc
- Double click the **setup.exe** file in the 'Pc Control Software' folder – click Next
- On Windows 2000 and XP, the customer information screen is displayed. In the fields provided type in your User Name and your Organization (optional) . Click on either the **Anyone who uses the computer** (all users) or **Only for me** radio button and click **Next** to continue
- The Setup Type screen is displayed. Maintain the **Recommended** setting and click **Next** to continue
- The Ready to Install the Program screen is displayed. Click **Install** to start the installation update. At this point, a status window displays the installation progress of the software
- When finished the InstallShield Window Complete screen is displays. Click Finish to complete the installation. The Barracuda remoters software runs from the 'Programs' folder. Alternatively, it can be accessed from the associated Shortcut on the desktop.

15.3 TWO DIFFERENT VIEW MODES

The software is able to detect your screen resolution and automatically set the most suitable interface between the available ones: 1024x768 or 1280x800.



With 1280x800 resolution the navigation tree is on the left and looks like Windows' Explorer. That is very useful for people who must work with many targets and can use a high resolution monitor.

If you want you can switch between the two modes, thanks to the icon on the top right:



The selected resolution is saved in the status file.

15.4 READING OUT THE FIRMWARE CODE

Encoder Data

Name :

ID Label :

FW Code : **TOSM4IB1J08L0**

Copy FW Code to Clipboard

Each Barracuda motherboard has its own univocal code, named **firmware code** and composed by 13 alphanumeric characters.

That code – calculated on the basis of the current version, its manufacturing batch, the firmware version and other elements – must be noticed to the manufacturer in the event of installation of new services or options.

The firmware code is displayed on the Front Panel menu (*System Information* menu / *Firmware Code*) and on the Pc Control Software (*General Setting* panel - see picture). The *Clipboard* button copies the selected part of the picture to the clipboard. You can then 'Paste' it into any program that texts (such as email, Word docs, etc).

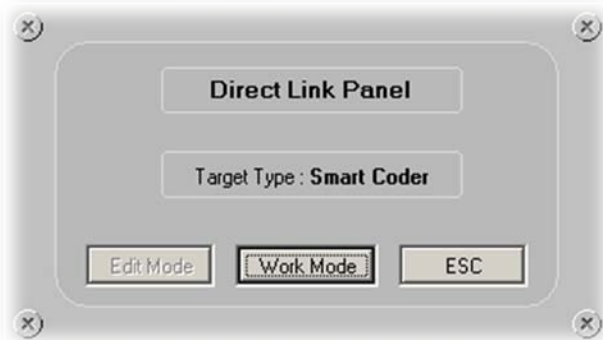
16 BASIC CONNECTION TO A SINGLE CODER (*DIRECT LINK*)

The Direct Link is the most immediate and easy way to connect the Barracuda to the Host Pc. It requires a bi-directional communication channel between the Host Pc and the Barracuda coder. That channel may be SERIAL RS 232C type or via MODEM.

This is for a real time monitoring of Barracuda current status (audio levels, RDS services, etc).

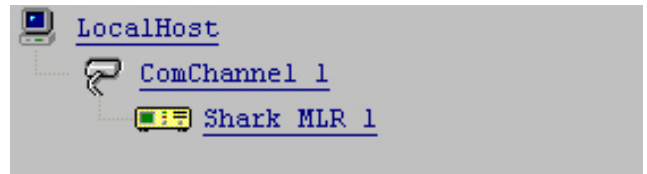


- Click **Direct Link** button



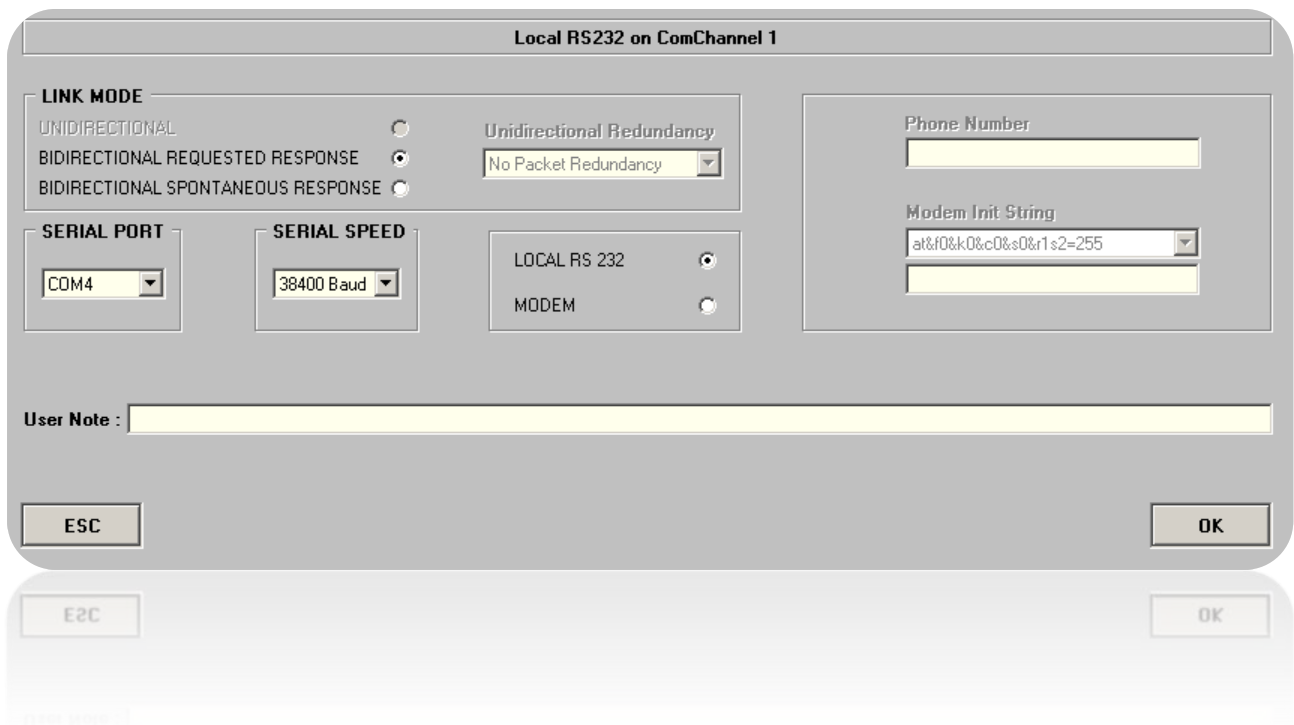
- click **Open Panel**: You will get a mask with a menu listing all the available Barracuda versions.

- Click **Work Mode** button. At this moment, a very basic connection 'tree' will be displayed, showing just Yr Pc (local Host), the serial communication channel (ComChannel 1) and the target equipment.



To check or set-up connection parameters, click ComChannel icon:
You will get a window summarizing all settings done / possible for that channel.

Two communication channel may be used: SERIAL RS232 or DIAL-UP MODEM.
For settings of each of them, refer to following chapters.



16.1 DIRECT LINK through SERIAL RS232

Whenever connection to the Barracuda is achieved through **Serial** connection, choose '**LOCAL RS 232**' in the communication channel configuration windows (*ComChannel*). Connection mode ('Link Mode') will be automatically set as 'bidirectional':

You will need to set parameters associated to the Pc Serial Port to be used and to its speed.

SERIAL PORT It selects the Pc Serial Port to be used for the connection (from 1 to 255).

SERIAL SPEED It sets the maximum Baud Rate for the selected Pc port. By default, the Smart Coder Remoter will show the maximum value (38400 Baud),



The communication Baud Rate set on the Pc Control Software **MUST MATCH** the corresponding Baud Rate set for the linked Serial Port on the Barracuda. For example, if Serial Port 1 on the Barracuda runs at 4800 Baud, the same speed must be set also for the Pc Serial Port involved in the link.

Enter a mnemonic comment / character string into the '**User Note**' field (For example: *TELECOM TOWER – Radio One*). Click OK to confirm, ESC to leave without saving.

16.2 DIRECT LINK through UP-LINK MODEM

Whenever connection to the Barracuda is achieved through two Dial-Up modems, choose '**MODEM**' in the communication channel configuration windows (*ComChannel*). Connection mode ('Link Mode') will be automatically set as 'bidirectional':

Refer to the APPENDIX of this manual for physical connection between the Modem and the Barracuda, at the Remote side (**Barracuda Serial Port 1** must be used for that purpose). On the Smart Coder Remoter software, You must set the Serial Port used for connection to the modem and associated connection speed (that usually is 38400 Baud for Pots/PSTN modems and 9600 Baud for GSM modems). You are also requested to enter a Modem initialization string.

SERIAL PORT It selects the Pc Serial Port to be used for the connection (from 1 to 255). In the event of an USB modem, check which 'virtual' Serial port is automatically selected by the Pc.

SERIAL SPEED It sets the maximum Baud Rate for the selected Pc port. By default, the Smart Coder Remoter will show the maximum value (38400 Baud),



The communication Baud Rate set on the Pc Smart Coder Remoter **MUST MATCH** the connected Modem Baud Rate.

INIT STRING

MODEM SETUP

Phone Number

Modem Init String

Enter here the modem AT initialization string. The Smart Coder Remoter offers two pre-set strings. The shortest one (*at&f0&k0&c0&r1s2=255*) usually fits PCI internal modems, while the longest one (*at&f0&k0&c0&s0&r1s2=255*) usually fits external modems.

PHONE NUMBER Enter here the number to dial, along with Country code, Area Code, Prefix, etc.

Click OK to confirm, ESC to leave without saving.

16.3 CONNECTING A DIAL-UP MODEM

Whenever a remote control through dial-up modem is required, connect the modem to Serial Port 1, on the back of the unit. Please pay attention to the Port 1 configuration: its speed must be set to:

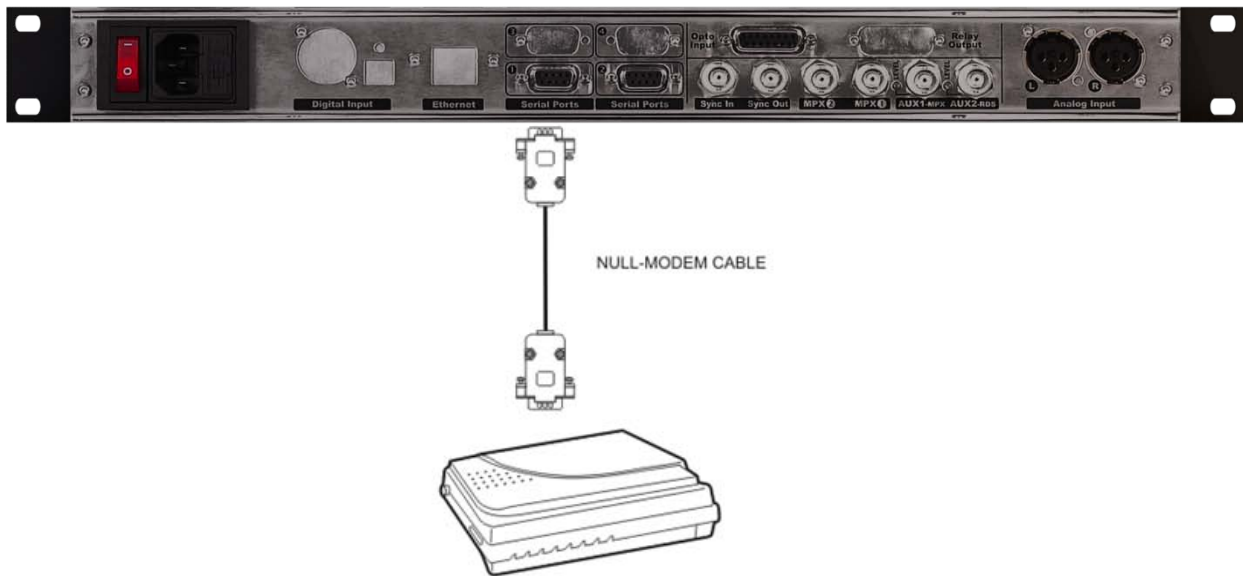
- **38400 Baud for Pots dial-up modems**
- **9600 Baud for GSM modems.**

A 'cross' (**NULL-MODEM**) **CABLE** is needed for connection to the modem. The following table shows the wiring diagram for the cable in both case the Modem has 9 pins or 25 Pins female SubD connectors.

Also remember to:

- On a 25 pin plug connect pin 6 and 8.
- On a 9 pin plug connect pin 1 and 6.

	SHARK side (SubD9 Male)	Modem Side (SubD 9p M)	Modem Side (SubD 25p M)
Pin	2	3	2
Pin	3	2	3
Pin	4	6 and 1	6 and 8
Pin	5	5	7



Regarding the Receiving Modem (the one connected to the Shark serial port), it must have at least the following settings (modem commands are in brackets. They are related to the most common modem models):

- **IGNORE CD (the usual command is &C0)**
 - **IGNORE RTS (&R1)**
 - **IGNORE DTR (&D0)**
 - **Disable TX Flow Control (&H0)**
 - **Disable RX Flow Control (&I0)**
 - **Disable Data Compression (&K0)**
- You also to set the S0 and the S2 registers in the following way:

- **S0=2**
- **S2=255**

*S0 Register represents the number of rings before Auto-Answer. It sets the number of the rings required before the modem automatically answers a call. Range: 0-255 rings. Setting this register to zero disables auto-answer mode. S0 = n, where n is the number of rings. **It is advised S0=2***

*The S2 register (Escape Code Character) specifies the ASCII value of the character used in the escape code. (The escape code is the escape character entered three times in succession.) When the modem is in connect state and it receives the escape code, the modem enters command state. Normally, setting register S2 to 128 or above disables the escape code character. **It is advised to set S2=255***

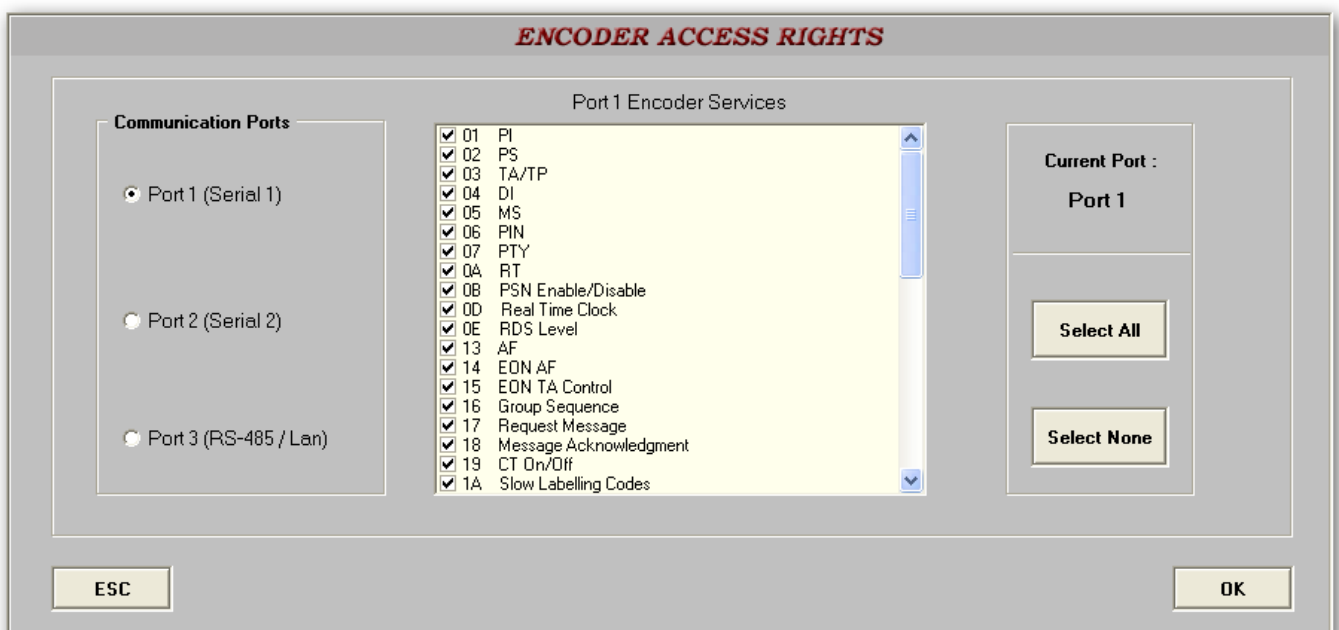
You should **load those settings in the modem memory**, so that they are automatically loaded at the modem start-up. Please refer to the modem user guide for further reference.

For proper configuration of BSN software in order to support modem communication refer to Part TWO of this manual.

17 MANAGING ACCESS RIGHTS TO THE ENCODER



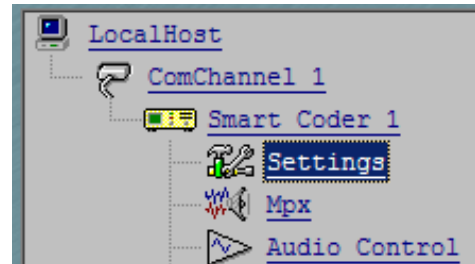
By accessing Access Rights panel from the menu tree, you may set RDS services granted / allowed on each Connection Port.



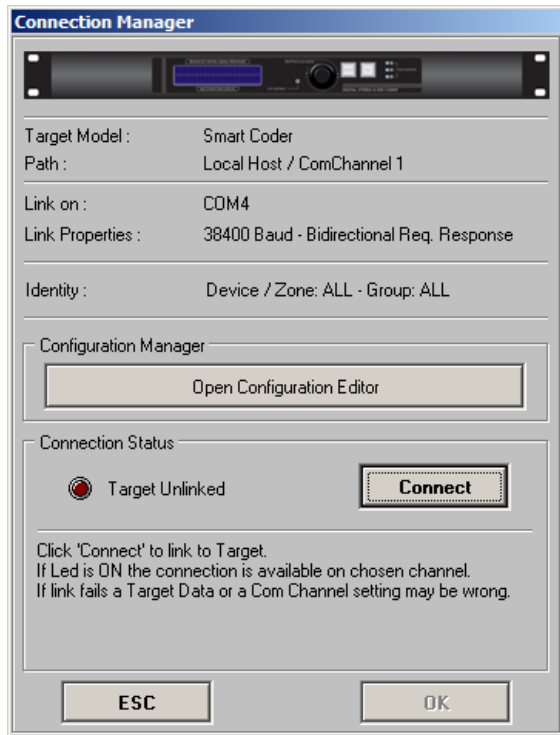
18 GETTING CONNECTED - THE 'CONNECTION MANAGER'

Once the configuration of Communication Channel is finished, You may run the physical connection to Barracuda. **Double click the Barracuda icon** You are going to connect to. The 'Connection Manager' window will open, that summarizes all connection settings and configuration. In this example, connection is done through Serial RS232

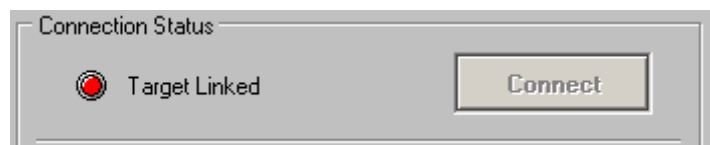
The '**Open Configuration Editor**' button open an 'off-line' configuration window, for editing data to be uploaded into the Barracuda when connecting. (v. Chapter 22).



Once checked the connection settings, click **CONNECT** to establish the link with the Barracuda.

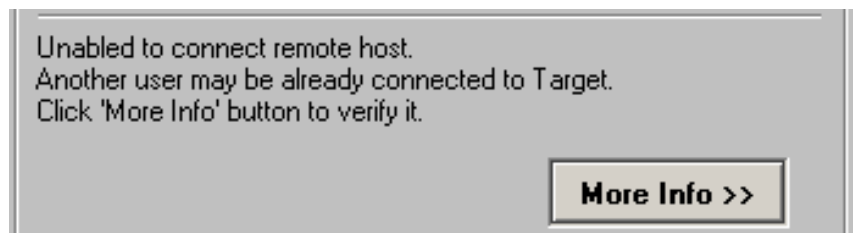


If the connection runs properly, a Red Light with associated 'Target Linked' label will turn on.



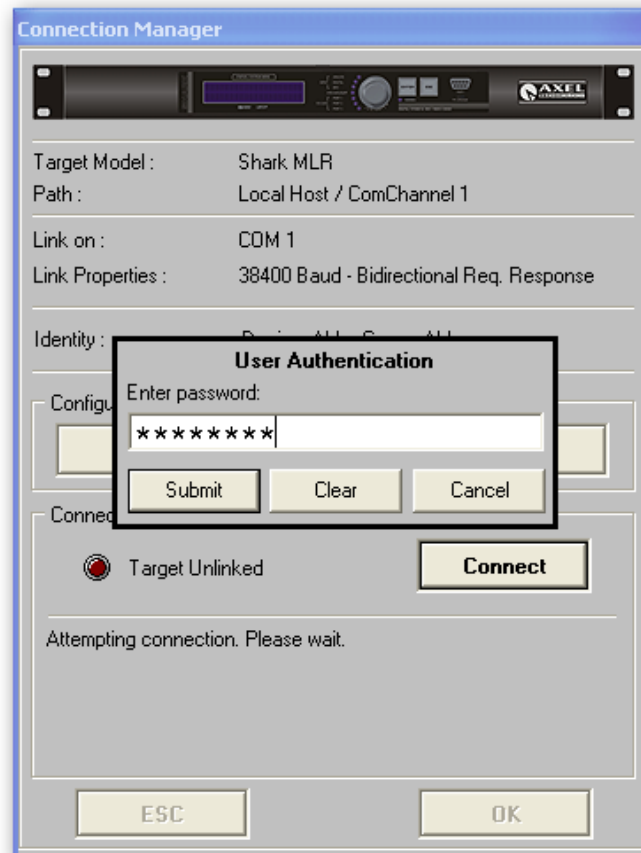
If not, a proper message tells possible causes for connection errors (wrong serial port, no answer from the Target, etc).

In the event of IP connection over local network, **More Info** button offers further information on the reasons of missed link (for example, another user is already connected)

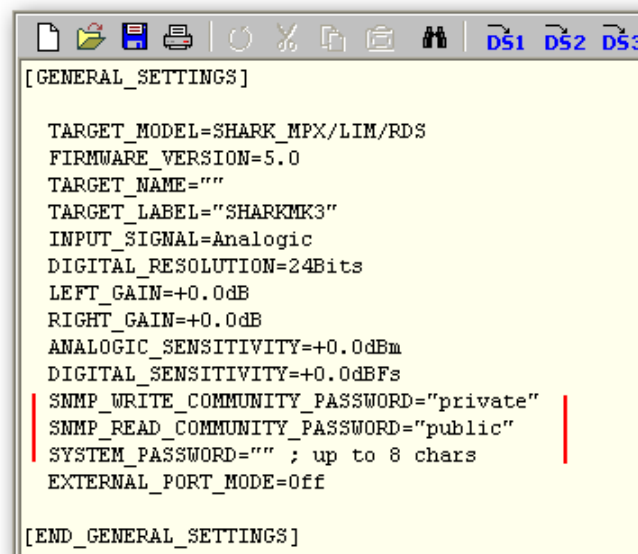


19 HOW TO SETUP A CONNECTION PASSWORD

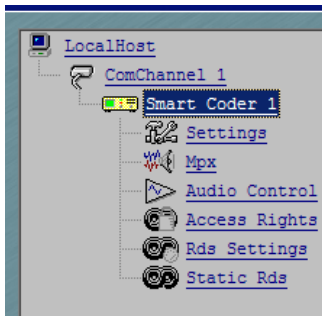
When connecting to Barracuda in BIDIRECTIONAL mode, a System Password may be setup, in order to prevent access from not authorized users.



System password must be setup from the Configuration Editor (see relevant Chapter).

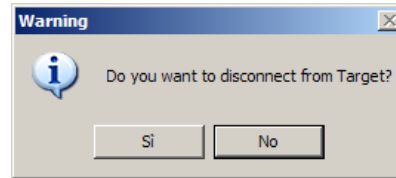


20 HOW TO DISCONNECT FROM A BARRACUDA

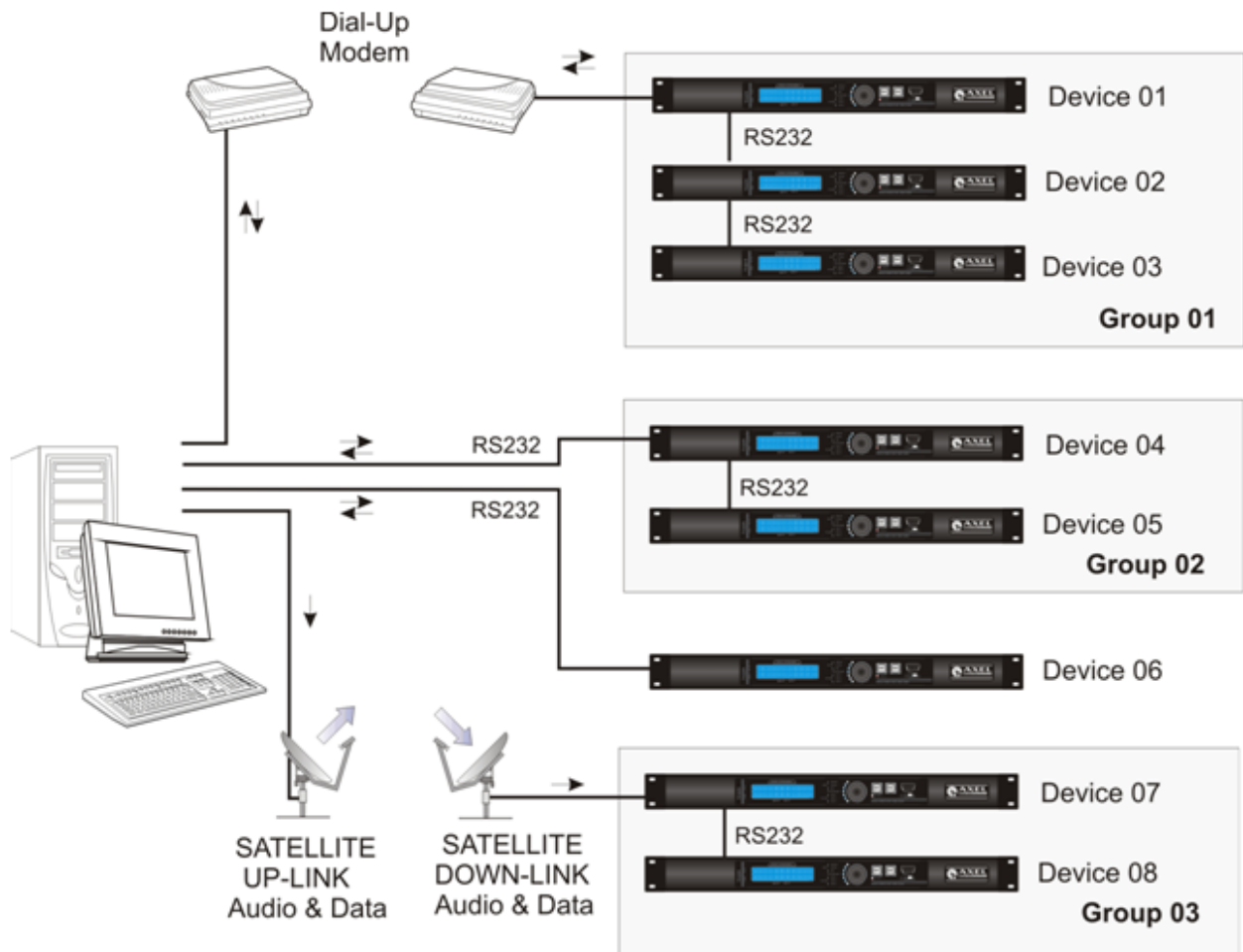


To disconnect, **double click** on the **icon of the unit** to disconnect from or double click on the associated **Com Channel icon**.

For example, with reference to the picture, double click on the Barracuda MLR 1 icon or the ComChannel 1 icon. A message will appear, asking to confirm disconnection.



21 MANAGING BARRACUDA in GROUPS



Barracuda Coders can be managed / accessed either as single Units, or in groups. To manage Barracuda in Groups, You will need to assign each unit with a identification code, composed by a Device Number and a Group Number.

This give the users the highest flexibility in controlling units individually or in groups, by sharing same commands among several units or forcing an individual unit with a specific address to execute a broadcast command.

The Device Number and the Group Name will be given to each Barracuda using a dedicated tool, called Target Edit Manager and included in the Smart Coder Remoter software suite.

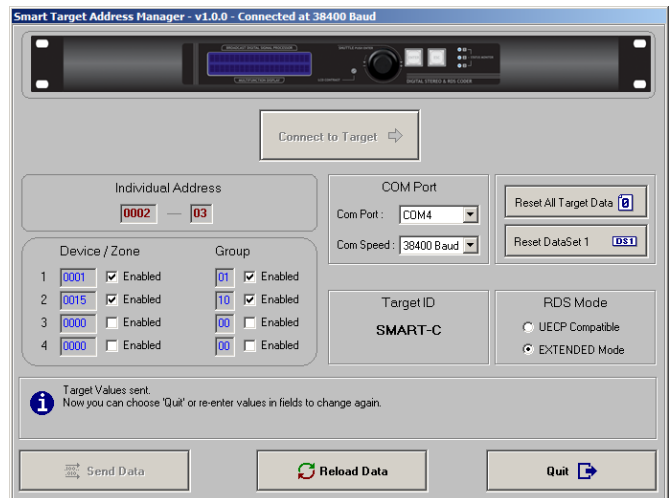
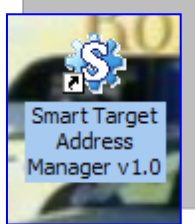
The same tool allows also to provide each individual unit or group with a 'Target / Group Name', i.e. a 'mnemonic' field to make control and connection much easier. For example, a national network could assign the *Group Name* field to the region where the unit is in operation, and give the *Target name* the name of the town hosting the broadcasting site, or the city covered by that site. Suppose you have 3 coders in the Tuscany region (the first covers Lucca, the second Florence and the third Pisa) and 4 others in the Marche (Pesaro, Ancona, Urbino, Macerata). The Target name and Group Name will be programmed for the individual machines as follows: Group name = Tuscany, Target Name = Lucca for the first coder, Group name = Tuscany, Target Name = Florence for the second coder, etc.

Target Name	Group Name	Device Number	Group number
Lucca	Tuscany	0001	01
Firenze	Tuscany	0002	01
Pisa	Tuscany	0003	01
Pesaro	Marche	0004	02
Ancona	Marche	0005	02
Urbino	Marche	0006	02
Macerata	Marche	0007	02

Connection between remote Barracuda units and the central control Pc may be uni-directional or bi-directional, depending on the available communication resources and the typology of controlled units.

For example, the picture above shows a Satellite channel, which is typically uni-directional, two serial RS232 connections, one monodirectional (because connecting a group of equipment) and one bi-directional (linking just one unit). Up to 3 Users can be managed, each one accessing its own system tree, i.e. its own portion of system. That means, it is possible to give to each user different rights in accessing the targets and their configuration.

Group Number and Device Number correspond respectively to UECP Site Address and Encoder Address codes, and can be assigned using Smart Target Address Manager

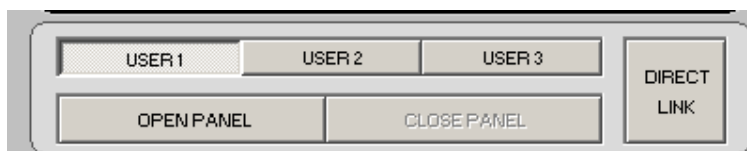


21.1 FIRST STEP: COMPOSING THE SYSTEM 'TREE' INTO THE BSN (EDIT MODE).

As first step, You need to 'edit' (draw) the system tree like on a 'blackboard', starting from the central Control Pc, adding connection channels and, for each 'branch', the associated target(s) or groups of units. Local Host Pc is the Pc running the Smart Code Remoter software (i.e. the Pc you are using!). At this time, each single element composing the system will be not configured. We just place 'blocks' onto a virtual 'blackboard', to have a proper representation of the actual system. Later, from the Work Mode, each unit will be assigned with 'real' operation parameters, such as Baud Rate, Com Ports, Address, etc.

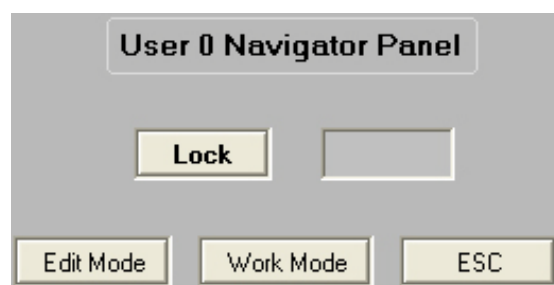
You may edit / compose 3 different system trees, one for each USER listed in the Smart Code Remoter panel (USER 1, USER 2, USER 3)

1



Select the User access (for example. User 1) and then press the 'Open Panel' button: the User navigation Panel will be automatically displayed.

2

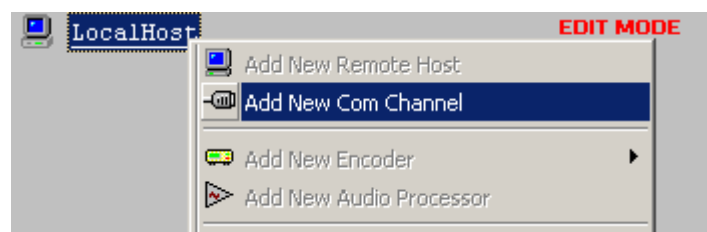


LOCK function: To prevent undesirable access to system configuration pages, enter a generic password (which can be changed at user's discretion) in the blank field and click Lock button.

To unlock, enter the SAME password and click 'unlock'

Click **Edit Mode** button: Edit Mode Navigator Panel will open (and the 'Edit Mode' identifier appears at the upper right corner).

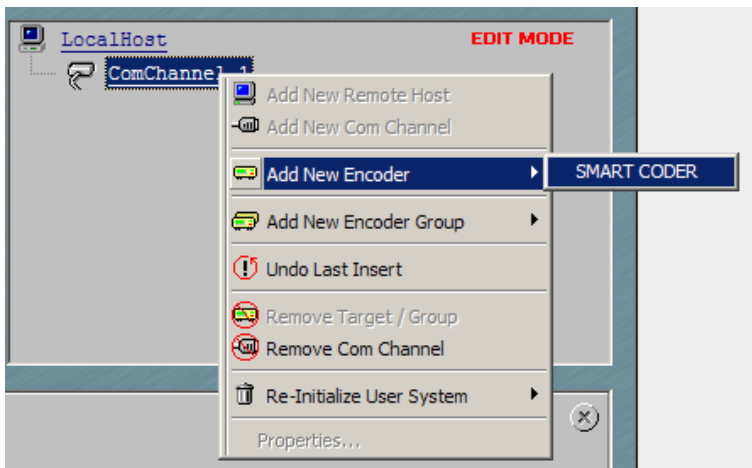
3



Move the mouse pointer onto the **Pc LocalHost** icon and then **click right**: a pop-up menu will appear. First, You have to add a Com Channel, i.e. a serial link connecting the Control Pc to remote target(s). That Com Channel will be edited later.

Each Com Channel may be associated to Single Units (single targets) or Groups of Targets. Various 'undo' tools are also available for removal of inserted elements or system re-initialization.

21.1.1 ADDITION OF A SINGLE CODER



Having placed the communication channel, click right on *ComChannel* icon: a new pop-up menu will appear.

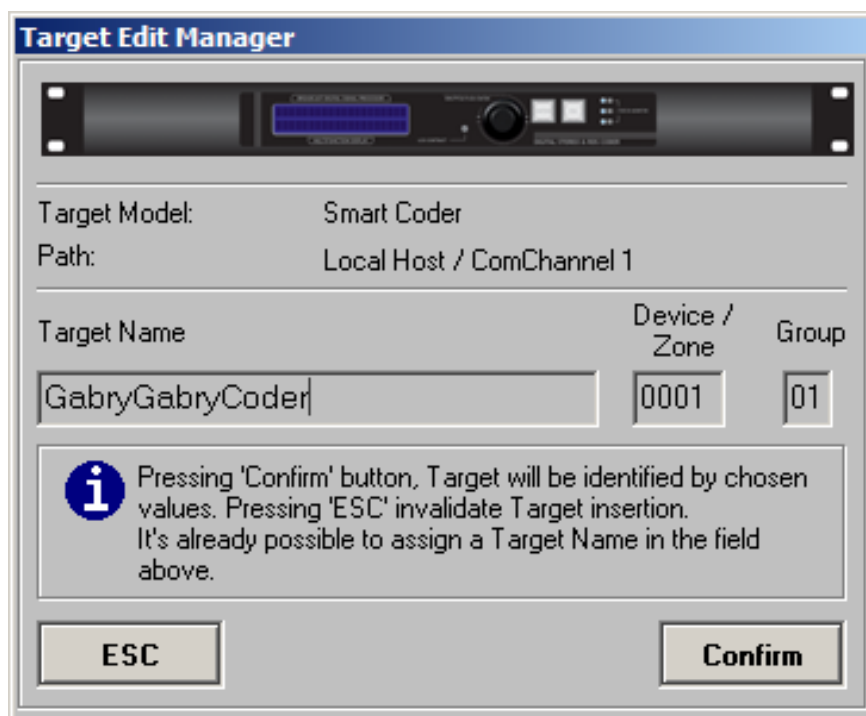
To add a new single encoder, select *Add New Encoder* item and then select the Target version (Smart Coder)

Every time a new Target or a new Group of Target is added, a special window (**Target Edit Manager**) opens automatically. It allows You to set two basic Target identification codes:

a **Device Number / Zone** (4 characters) and a **Group Number** (2 characters).

It permits also to associate an identification label (**Target Name**) which makes target identification easier across the network. The Target Name will be displayed next to the icon on the System Tree, as well as in the 'Settings' window in the Smart Coder Remoter. Please refer to paragraph "THE MNEMONIC IDENTIFIERS FOR SINGLE TARGETS OR GROUPS".

Be careful not to assign the same *Target name* or the same *Group name* to two different devices.



Group Number and Device Number correspond respectively to UECP Site Address and Encoder Address codes.

21.1.2 ADDITION OF A GROUP OF CODERS

After having created a new communication channel icon (see *ComChannel2* in the picture), click right on that icon: a new pop-up menu will appear.

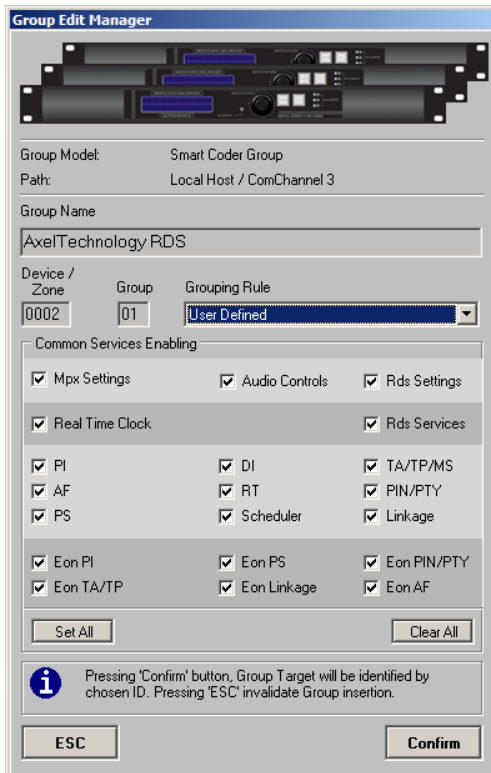
To add a group of encoders, select *Add New Encoder Group* item and then select the coder type.

A new group of encoder is a group of Targets which share the same Group number and are of the same type (i.e. they can be programmed in the same way and at the same time).



NOTE: Communication channel is automatically forced to **Monodirectional** (one-way) as soon as two or more 'targets' will share the same communication channel i.e. as soon as a **New Encoder Group** is added.

The 'Group Edit Manager' window will open automatically. It can:



- Assign a specific Group identifier (**Group ID**) or associate current targets to all Groups (**ALL**)
- Assign a **Group Name**, i.e. a mnemonic identifier (max 20 characters).
- State which **configuration commands** (MPX settings, Audio Control, RDS Settings) will be accepted by this Group (i.e. which configuration can be altered from the remote side). As You can easily understand, available command configurations will depend on actual version of Barracudas belonging to the Group.
- In the event of **RDS versions**, the window will list those services which can be altered from remote (DI, PS, RT, etc).
- **SET ALL** button sets all available services 'on'
- **CLEAR ALL** button set all active settings 'off'.

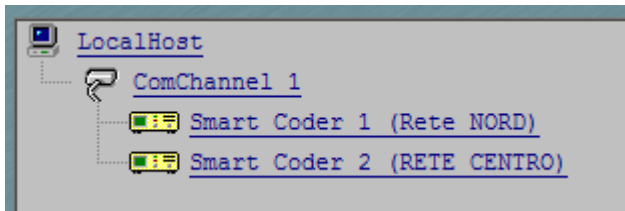
Once the window has been edited, press **Confirm** to save data or **ESC** to quit without saving modifications.

The Group Edit Manager' window can be recalled at any moment just double-clicking on the associated Group icon.

Group Number and Device Number correspond respectively to UECP Site Address and Encoder Address codes.

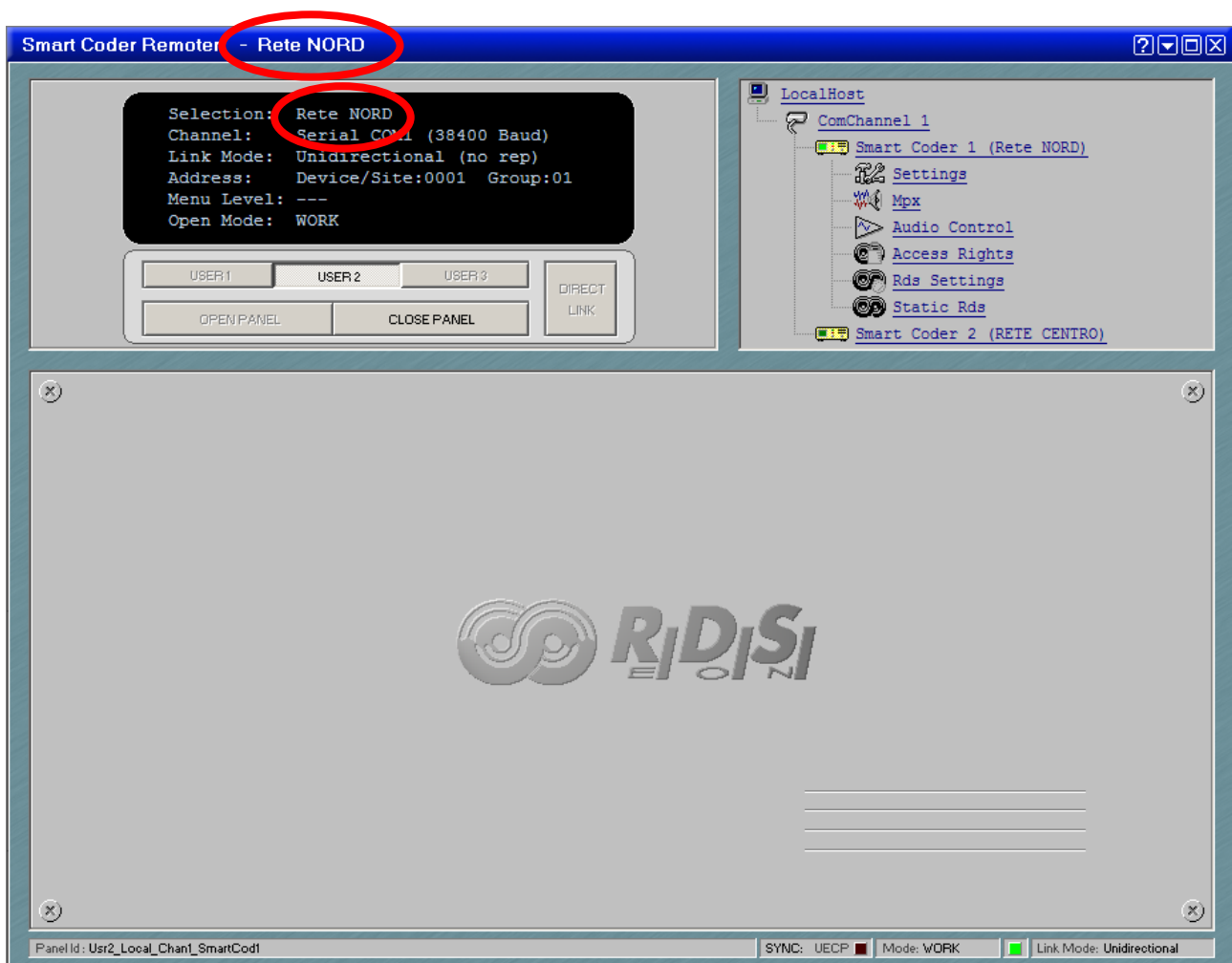
21.1.3 THE MNEMONIC IDENTIFIERS FOR SINGLE TARGETS OR GROUPS

The fields 'Target Name' and 'Group Name' in the respective Target Edit Manager and Group Edit Manager windows may be loaded with a name or an equipment label (max 20 characters) in order to make coder identification easier. Typically, identifiers are geographic identifiers or they are associated to the name of the Network or to the Frequency/channel used.



For example, entering '**Rete NORD**' as Target Name, that name will appear next to the device (see picture on the left).





The same name will appear in the 'General Settings' window / 'Encoder Data' field and in the connection summarizing table of the BSN (see picture below), once the link with the target has been established.



NOTE: 'Target Name' and 'Group Name' are saved on the computer running the Smart Coder Remoter. They are never installed into Barracuda physical memory. They serve as 'guide' / hint for the connection task

21.1.4 SYSTEM TREE – EDITING TOOLS

The menu items displayed whenever right clicking on the system Tree offer some helpful editing tools:

 Undo Last Insert	Removes the last coder, or last group of coders, inserted
 Remove Target / Group	Removes the selected coder or group of coders
 Remove Com Channel	Removes the selected Communication Channel
 Re-Initialize User System ▶	Removes the whole System Tree and let You start again from scratch.
Properties...	Opens the Target Edit Manager or Group Edit Manager window , According to the selected Target (a single coder or a Group of them).

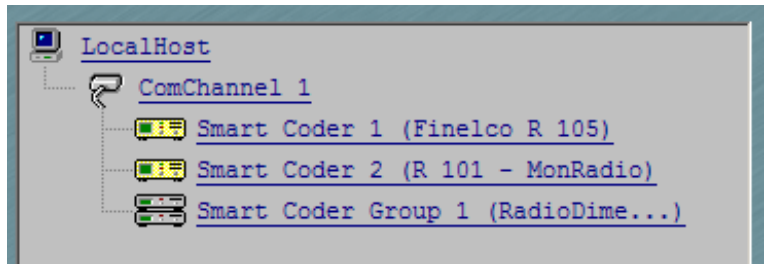
21.2 SECOND STEP: THE 'WORK MODE'

Once the system tree has been created in 'EDIT MODE', click **CLOSE PANEL** button.

The User will be asked whether to save or discard modifications done to the System Tree. Click Yes. Click Open Panel button: User 1 Navigation Panel will open. Click WORK MODE button.

The Smart Coder Remoter will display the same System Tree just created in the EDIT MODE, but

You will now be able to configure real operating parameters for each element in the system, such as ComPort, IP address, speed, etc and then establish a physical connection to the Target(s).



Follow the same procedures shown in the 'BASIC CONNECTION TO A SINGLE CODER' for proper configuration of connection channels and targets.

21.3 CONFIGURATION OF A MONO-DIRECTIONAL COM CHANNEL

As already stated, a system composed by a single Pc at the head of the network and by several distant Barracuda units (Targets) may require mono-directional com channels, i.e. channels which do not support any data stream from the Target back to the central control Pc. Monodirectional Com channels are usually available over satellite links.

In general, a Mono-directional channel may be RS-232 or Modem type. In both cases, You will need to configure which Serial Port and which speed must be used.

SERIAL PORT It selects the Pc Serial Port to be used for the connection (from 1 to 255). In the event of an USB modem, check which 'virtual' Serial port is automatically selected by the Pc.

SERIAL SPEED It sets the maximum Baud Rate for the selected Pc port. By default, the BSN will show the maximum value (38400 Baud),



The communication Baud Rate set on the Pc Control Software MUST MATCH the corresponding Baud Rate set for the linked Serial Port on the Barracuda. For example, if Serial Port 1 on the Barracuda runs at 4800 Baud, the same speed must be set also for the Pc Serial Port involved in the link.



In addition to connection speed, also a 'packet redundancy' factor may be set, in order to increase robustness of the link against transmission errors.

In practice, **no packet redundancy** means each transmitted packet contains 'original' information, not duplicated.

One packet redundancy means each data packet is followed by a second packet bearing the same information. If the first packet gets corrupted, the second is used to recover original transmitted information.

With the same philosophy, **Two packets Redundancy** means each data packet is followed by two redundant packets; **Three packets Redundancy** means each data packet is followed by three redundant packets, etc.

As one may easily understand, maximum link reliability is achieved by setting **Four Packet Redundancy**, even if it involves a 'real' (payload) connection speed which is one fifth of that selected in the 'Serial Speed' menu.

22 THE 'CONFIGURATION EDITOR': WHAT IS AND HOW TO USE IT

The Configuration Editor makes viewing or changing the Barracuda current settings easier, as it allows you to edit a configuration file, through an easy-to-use **TEXT ONLY** interface like Windows "Notepad".

Complicated system parameter settings / changes can be simply accomplished in a 'written' mode, through commands/values provided in a textual (ASCII) way.

For example, a simple PSN programming may be 'written' as follows:

```
PSNAME_0= "BBC ONE ",Normal
PSNAME_1= "LONDON ",Normal
PSNAME_2= "UK      ",Normal
```

Furthermore, any operative configuration of the encoder (input gain, pilot level, RDS messages, RDS DataSet status, etc) may be saved at any time and recalled at Yr convenience.

You may also 'Import' (download) the current configuration from Your target and:

- duplicate it on a new Target
- print-out it in a textual (ASCII) format
- save it in a Pc directory

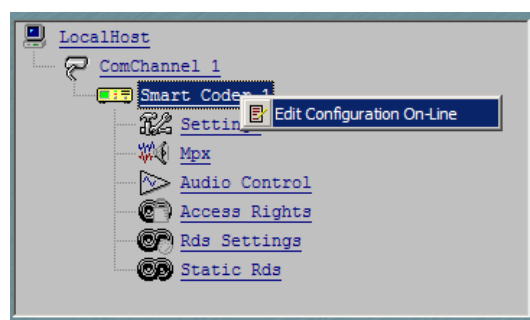
The Editor can run in two different modes: **OFF-LINE** (i.e. there is no direct link to the encoder) or **ON-LINE** (i.e. the computer running the BSN Remote Software must be communicating with the Barracuda).

In the **OFF-LINE** mode, You may open one of the 'Demo' files or edit a file previously saved.
Edited files can NOT be loaded into Barracuda memory.

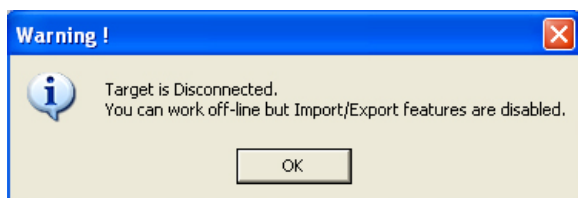
In the **ON-LINE** mode, with a bi-directional link You may import from the Target its current configuration, edit it and then export it again to the Target. Using a mono-directional link export toward the Target will be only achievable.

The Configuration Editor is based on standard **Windows tools** for text editing (copy, paste, cut, find, undo, save, open, etc) and its use is therefore simple and intuitive.

To open the Configuration Editor in the **ON-LINE** mode: after accessing the target in Simple or User X mode, **click right** on the **Target icon** on the Navigation tree.



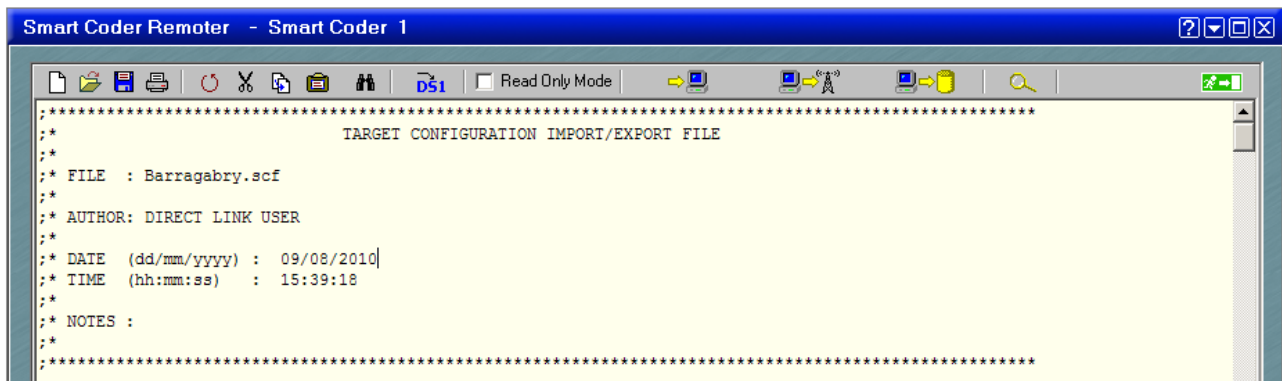
In the **OFF-LINE** mode click on **Open Configuration Editor** in the **Connection Manager** window before connecting to the Target.



A **Warning** box will remind You that You have chosen the off-line work mode. As the Target is not connected, Import / Export of current Target configuration are therefore not possible.

Click **OK** to access next Configuration Editor window.

22.1 EDITOR TOOLS



Starting the Configuration Editor opens up the Editor window. The buttons along the upper side select some typical file management options.



NEW command: It will display a **default** Configuration File, accordingly to the chosen Target.



OPEN command. It will open a window showing all the available configuration files (with extension *tcf* - *target configuration file*). If Direct access is engaged, BSN provides You also with 8 different Demo files, helping to understand the right way to operate RDS Scheduler.



SAVE it saves current file (configuration) to the location the user specifies



PRINT command. A specific window will be displayed, helping You in choosing the portion of document to be printed (only Target 'hardware' configuration, Hardware configuration + RDS DataSet 1, etc)



UNDO command. This function is available only with 'Read Only Mode' selection disabled



CUT command. This function is available only with 'Read Only Mode' selection disabled



COPY command. Function available when 'Read Only Mode' option is disabled.



PASTE command. Function available when 'Read Only Mode' option is disabled.



FIND command: To search for text in the file



JUMP TO DATASET. The 4 buttons DS1, DS2, DS3 and DSA instantaneously recall the portion of configuration file associated to the desired Dataset.



IMPORT command. It reads the current overall Target configuration and displays it in the Editor window. Function available only with a single Target connected in Bidirectional Mode.



EXPORT command. It loads the currently displayed configuration into the Target memory and updates the DataBase of the local files. Function available in 'On Line' mode only, regardless of connection mode (bi / monodirectional).



UPDATE command. It updates the DataBase of the local files only, without loading the configuration in the Target memory



TEST command. It checks the syntax of edited file and highlights possible incoherencies/ errors.




EXIT command. It closes Configuration Editor window.

22.2 TYPICAL IMPORT / EXPORT TASKS

As explained, Configuration Editor allows You to import (download) current configuration from the Target in order to easily edit/modify it. Once the editing task is accomplished, the new configuration file can be easily exported to the file in order to make it effective.

This is the procedure to follow.

- With the Target connected in Bi-directional mode, click the IMPORT icon : data transfer from the Target to the computer will be engaged. This could take from a few seconds to a few minutes, depending on the link speed.


- Once the import has finished, the Configuration Editor window will display the current, full Barracuda configuration, starting from 'hardware' data (in/out levels, selected audio input, etc) and then showing RDS data. Keys give direct access to configuration data of associated DataSet.


- De-select the 'Read Only Mode' option



Every time a new file is loaded, it is displayed in ReadOnly mode, in order to prevent from accidental modifications. Uncheck *ReadOnly* box prior to start editing the file.

- Edit the file using the provided tools. Pay particular attention to text layout (spaces, punctuation, etc).

- Once finished editing the text, click TEST tool (magnifying glass ) to check correct text formatting: in the event of syntax or typewriting errors, relevant text line will be automatically highlighted in bold. Appendix A contains full syntax of the Configuration Editor.

- Click EXPORT button : the edited configuration file will be automatically transferred to the Target. When file transferring ends, Barracuda will be on-line again, according to new configuration loaded.

EXAMPLE

To Increase MPX output level to +5.6 dB (default is 0.0 dB) follow these steps:

With the Target connected, click **IMPORT icon**  Wait for file loading

Go to [MPX_SETTINGS] section:

```
MPX_LEVEL=+0.0dBm
PILOT_LEVEL=-19.8dB
PILOT_PHASE=+0Deg
POST_CLIPPER_GAIN=+0.0dB
```

Deselect the 'Read Only Mode' ☐ **Read Only Mode** option

Type the new MPX output level:


```
MPX_LEVEL=+5.6dBm
```

Click **TEST** icon to check data consistency 

Click **EXPORT** icon 

In the meantime, the same configuration file may be saved (for example to load into another Target)

by pressing  icon

The same file can be also **printed-out** 

Close the **Configuration Editor** window (Exit) 

23 STEREO GENERATOR – INPUT CHANGEOVER

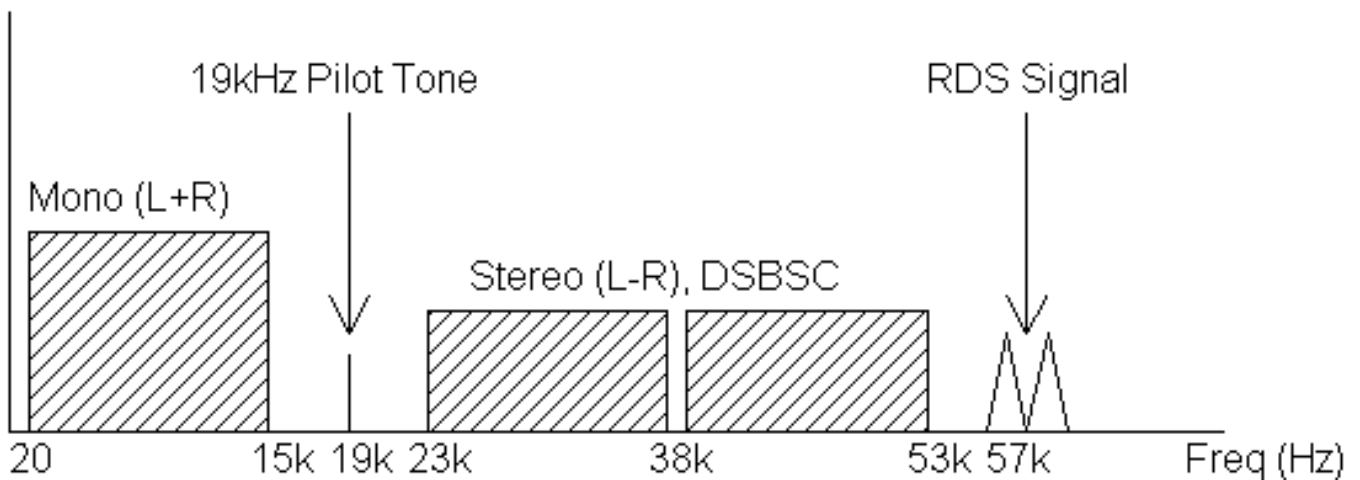
23.1 THE MPX SPECTRUM

We assume MPX signal is composed by three major **components**:

- **Audio Signal (L and R channels)**
- **Stereo Pilot tone (19Khz)**
- **Radio Data System signal (57Khz)**

The stereo encoding process modulates (double side-band suppressed carrier) the L-R or stereo difference signal onto a 38kHz sub carrier. Its side-bands will extend by $\pm 15\text{kHz}$. At the top end this will be 53kHz. Digital filter accomplishes all contents above 53 kHz are suppressed by the highest level. This precise spectral management contributes to loudness, since it ensures that no wasted energy is transmitted.

Please note that composite clipper does not degrade RDS signal quality because it is applied before the 19kHz pilot is added to the multiplex signal (if the pilot was present at the composite clipping stage, the third harmonic of the pilot caused by the clipping process will fall exactly on 57kHz, degrading the RDS).



Each component of MPX signal is generated digitally and therefore available at the highest quality.

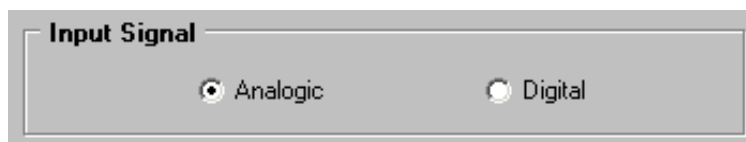
23.2 AVAILABLE INPUTS

Barracuda manages 3 Input sources:

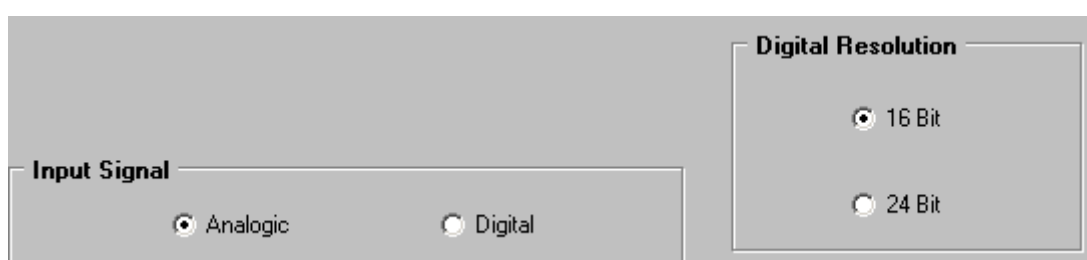
- a stereo **Analog** audio pair
- a stereo **Digital** audio pair
- an input for **External MPX** (Available on Split Option)

Selection between sources may be achieved

- **Manually**
- By contact closure (**GPI input**).



23.3 HOW TO SELECT THE INPUT SOURCE



In the **General Settings** panel of the Smart Coder Remoter, You may select the (primary) source for the Barracuda stereo coder:

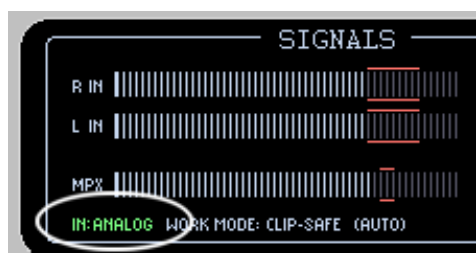
- Analog Audio (stereo input)
- Digital Audio (AES/EBU input)

In the event of digital sources, you are also required to set audio source **resolution** (16 or 24 bits / sample). Primary input audio source selection may be achieved also from the Fron Panel Menu

23.4 HOW TO KNOW WHICH INPUT SOURCE IS CURRENTLY ON-AIR

ON THE PC CONTROL SOFTWARE

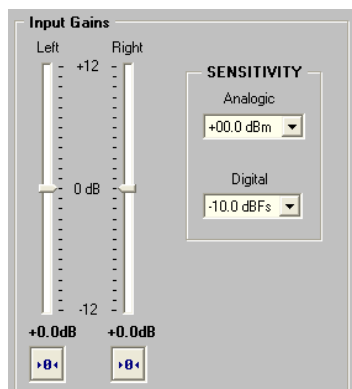
With the Barracuda unit connected in **bidirectional way** to its Pc Control software:



A green label indicates selected and valid Primary source.

24 STEREO GENERATOR –LEVEL AND WORKING MODES

24.1 INPUT AUDIO LEVEL CONTROL



Input level control stage is actually based on two sub-controls: sensitivity adjustment and 'fine' tuning, independent for channels Left and Right.

Right Gain (applies to either analog or digital sources). It may adjusted in + /- 12 dB range with 0.1 dB step. Default: 0 dB.

Left Gain (applies to either analog or digital sources). It may adjusted in + /- 12 dB range with 0.1 dB step. Default: 0 dB.

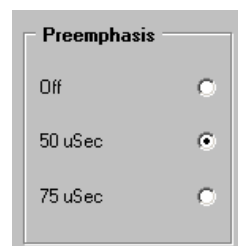
Sensitivity: different for analog and digital sources, it may adjusted in 0.1 dB steps. Analog: + 15 dBm to – 9 dBm. **Digital:** from 0.0 dBfs to – 24.0 dBfs.

Two buttons allows to **Return** automatically to **Zero** (RTZ) level on Input L/R Gains.



Input gains controls are automatically disabled when automatic Working Modes are engaged (*Clipper MPX* and *LogClipper*)—see next paragraphs.

24.2 SETTING THE OUTPUT PRE-EMPHASIS



(MPX panel / Preemphasis): it may be set to Off, 50uSec (as in use in European countries), 75uSec (as in use in North America, Canada and other countries)

NOTE: Only one pre-emphasis must be kept active in the transmitting chain. It is advisable to turn OFF the Barracuda pre-emphasis and Enable the pre-emphasis generated by the audio processor. This because a pre-emphasis filter applied at the last step of an audio chain emphasizes 'payload' signal along with possible noise, thus resulting in a degraded performance of the whole system.



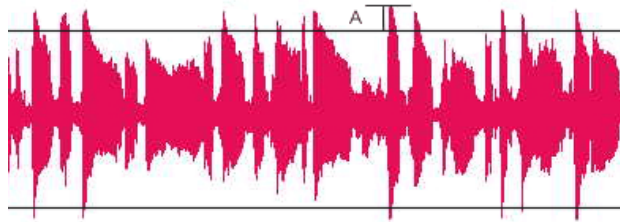
It is advisable to set the right Pre-emphasis as first step, as it affects the MPX generated level and thus the whole level tuning process described in these pages.

24.3 SUMMARY OF AVAILABLE AUDIO WORKING MODES

24.3.1 INTRODUCTION

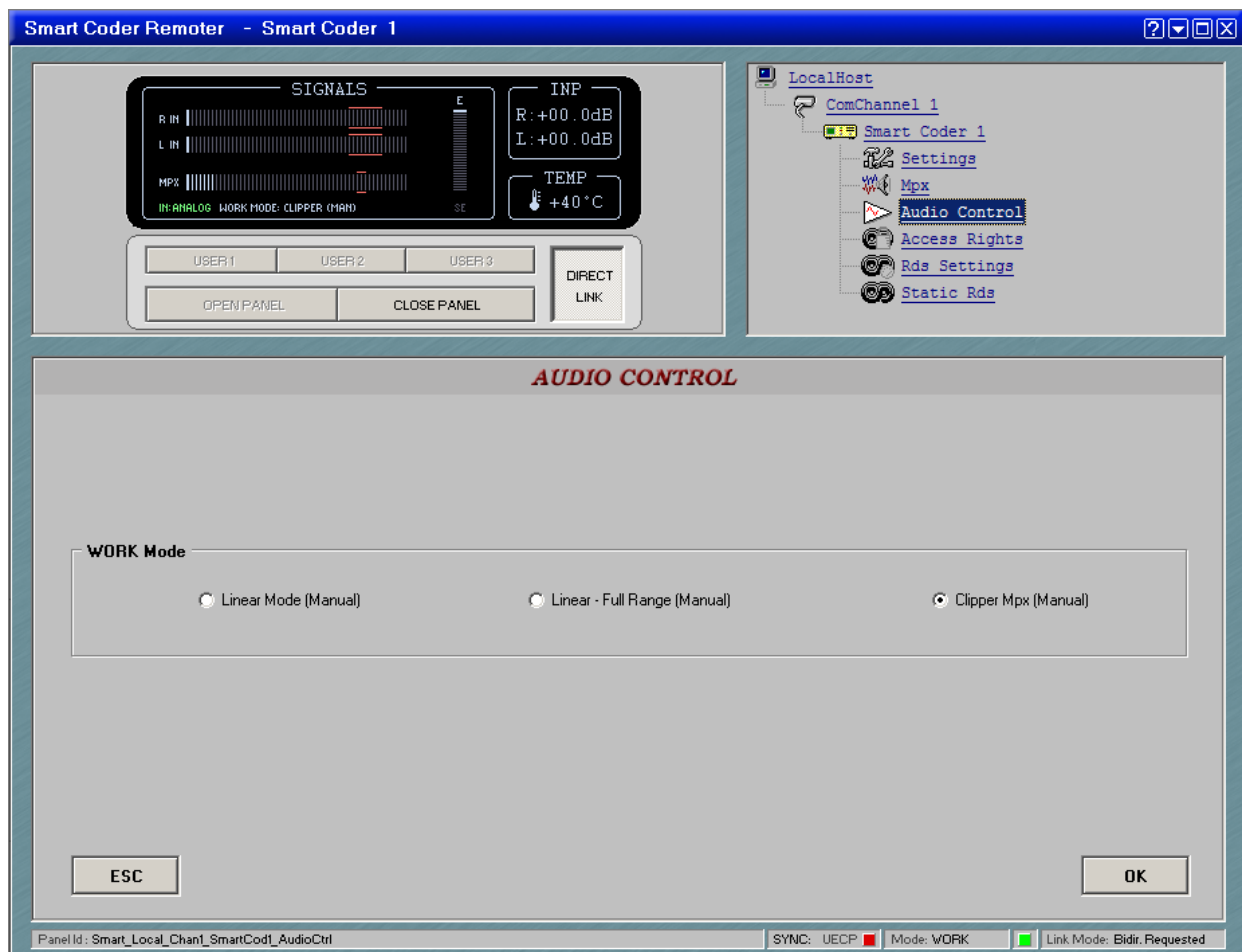
1 automatic modes plus 2 manual working modes are available.

In **automatic** modes, Barracuda automatically adjusts audio input levels (L/R gains) and AGC level in order to 'size' the portion of audio signal clipped by MPX Clipper (see '**A**' **amplitude portion** in the picture here below, exceeding clipper trimming amplitude) and thus get control over resultant density of aired MPX signal.



Clipper threshold applied to input signal. Depending on the chosen Clipper mode, a variable portion of the signal will be cut-out by the clipper, resulting in an increased density.

3 manual clipping modes are available (2 with no Clipper intervention, one with Clipper intervention). By choosing one of those modes, Barracuda behaviour is identical to a traditional, non-automatic Stereo Generator. Input Gain controls are in these cases fully user-adjustable



MODE	TYPE	DESCRIPTION / NOTES
Linear Mode	Manual	Barracuda' behaviour is totally similar to that of an analog, traditional stereo encoder. There is <u>no MPX clipper intervention</u> . Max output deviation is 100 kHz. Input headroom around 10 dB.
Linear Full Range	Manual	Barracuda' behaviour is totally similar to that of an analog, traditional stereo encoder. There is <u>no MPX clipper intervention</u> . There is <u>no deviation limit</u> . Input headroom is around 20 dB. All signal components (including filter overshoots) will contribute for the final deviation on-air. Main signal deviation (and therefore signal 'loudness') will be therefore significantly lower than by using a well-tuned Clipper.
MPX Clipper	Manual	MPX Clipper stage is enabled. Audio input levels are fully adjustable. The portion of clipped audio signal is user-definable. being Clipper stage enabled, the generated signal will have a strong 'presence' effect, as it exploits the entire deviation range available. This operating mode is <u>always recommended</u> .

24.4 HOW TO ADJUST THE INPUT GAIN ON MANUAL WORK MODES

This section should be performed for both the analog and digital audio inputs. The Barracuda will store level settings for each separately allowing to switch between analog and AES/EBU inputs without resetting the input level. Note that there are different controls for calibrating digital versus analog audio inputs.



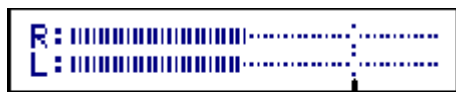
BEFORE CALIBRATION, MAKE SURE YOU HAVE PREEMPHASIS SET TO THE APPROPRIATE TIME FOR YOUR APPLICATION AS THIS WILL AFFECT THE OUTPUT LEVEL.

At this moment, **Warning LED** on the front panel might flash due to Audio Input overload and/or MPX signal exceeding deviation limit. Proper overall Clipper stage tuning coincides with **Warning LED** turning off. Therefore Audio input calibration might be not able to accomplish this condition.

Access the INPUT-MONITOR PAGE on the front panel Menu (or take a look to the left upper blackboard on the Pc control software and web browser screens).

It can have 3 different graphic forms, depending whether the Clipper is active or not and which Linear mode is engaged (Full Range or Linear):

24.4.1 LINEAR MODE



Nominal Input Level

With a 0 dB MPX level, **Nominal Input Level** reference indicates the input audio level (peak level) which corresponds to 75 kHz deviation. Sensibility and Gain controls should be adjusted so that the input program peak level coincides with the 100% modulation 'ceiling'.

Note: Setup should be performed for both the analog and digital audio inputs. The Barracuda will store your level settings for each input separately allowing you to switch between analog and AES/EBU inputs without resetting the input level. Note that there are different controls for calibrating digital versus analog audio inputs.

The Sensitivity Level (Analog or Digital) parameter sets the gain for both channels. After adjustment, peak indication hitting the **Nominal Input reference** point on the display or a little higher (see picture here below) is proper. This corresponds to 10 dB system headroom.

If further gain or attenuation is required, the individual **left/ right Gains** can be adjusting using the Input Left and Input Right controls

An optimal calibration of Left/Right input levels is displayed here- below.



Be aware that **well-defined audio peaks are achieved only with processed audio signals.**

Otherwise, no precise calibration of input signal will be possible.

After digital or analog input calibrating, You may set the analog level of the composite signal on the BNC connector. Please adjust the **Post Gain + MPX level controls** until you reach the desired modulation level.

24.4.2 LINEAR – FULL RANGE



Nominal Input Level

If a better headroom / input dynamic range (than the Linear Mode) is required, **LINEAR-FULL RANGE** input mode is provided. No clipping and no deviation limit is applied to signal processing in this case. Input headroom ranges up to 20 dB and an overall MPX level control is not provided. Nominal input level reference is nearer to the left margin than in the Linear Mode – MANUAL .

Note: Setup should be performed for both the analog and digital audio inputs. The Barracuda will store your level settings for each input separately allowing you to switch between analog and AES/EBU inputs without resetting the input level. Note that there are different controls for calibrating digital versus analog audio inputs.

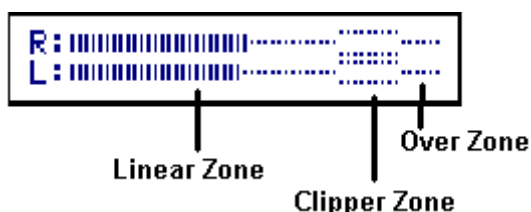
- 1) The Sensitivity Level (Analog or Digital) parameter sets the gain for both channels. After adjustment, peak indication hitting the **Nominal Input reference** point on the display or a little higher (see picture here below) is proper. This corresponds to around 20 dB system headroom.
- 2) If further gain or attenuation is required, the individual **left/ right Gains** can be adjusted using the Input Left and Input Right parameters

With Post Gain control set to 0 dB, the reference point displayed in the picture indicates the audio peak level associated to a 75 kHz deviation.

After digital or analog input calibrating, You may set the analog level of the composite signal on the BNC connector. Please adjust the **Post Gain control** until you reach the desired modulation level.

24.4.3 CLIPPER MODE

Metering scale is divided into **three** zones.



Linear Zone	This identifies the portion of audio signal that is affected only by Low-Pass / Preemphasis filters. No alteration due to the clipping is introduced. Signal is only affected by input filters and pre-emphasis.
Clipper Zone	This identifies the portion of audio signal being clipped.
Over Zone	This identifies a 'distortion' zone, which is related to a 'out-of-band' energy. Signal ranging in this zone should be avoided.

With a signal ranging in the Linear zone, You will need to increase sensitivity or Gain in order to get a signal hitting the Clipper Zone. In the following pages two preferred ways are described: with 100% Modulation Tone and with Processed Audio Signal.

CLIPPER MODE - CALIBRATION THROUGH REFERENCE TONE

- 1) Apply a Reference Tone (such as the Ref Tone generated by Falcon 15, Falcon 35 and Falcon 50 by Axel Technology, TigerShark or Falcon Five series) at its maximum level to the Barracuda analog or AES/EBU inputs. This will ensure right headroom when using pre-emphasis.
The Peak Tone identifies the maximum peak value of the audio and MPX signals reached by the equipment
- 2) Select the INPUT Module Setup menu and adjust the Sensitivity Level (Analog or Digital) control. After adjustment, peak indication hitting the left margin of Clipper zone is proper (see picture here below). This corresponds to a around 20 dB system headroom.
- 3) If further gain or attenuation is required, the individual left/ right Gains can be adjusted using the Input Left and Input Right parameters.

Following this calibration procedure, audio material will be kept unaltered and only spurious signal will be clipped.



- 4) Enable normal audio processing on the audio processor.

Depending on the input level and on the audio material contents, audio peak will range between 1 and 8 segments on the meter reference scale.

This peak increase on dynamic conditions is due to overshoot of input digital filter.

An overshoot of 3-4 segments (around 1 dB) may be deemed acceptable in case of disabled Barracuda preemphasis and an overshoot of 6-7 segments may be deemed acceptable in case of enabled Barracuda preemphasis.

As practical rule, if the audio peak ranges in the left half of Clipper Zone, possible overshoots will be compensated by Barracuda filters.

The following picture displays two acceptable calibrations:



The following picture displays two unacceptable calibrations (please, adjust Gain controls until peak ranges in the left half Clipper Zone):



REMARKS:

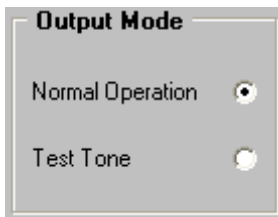
For a safer modulation, audio peaks should never exceed the Clipper Zone.



An audio material which is Preemphasized-only (i.e. not processed) may create very high peaks (over 13 dB). In this case, no accurate modulation control can be accomplished.

25 STEREO GENERATOR – MPX OUTPUT SIGNAL

25.1 CONFIGURATION OF THE OUTPUT: NORMAL, PEAK TONE



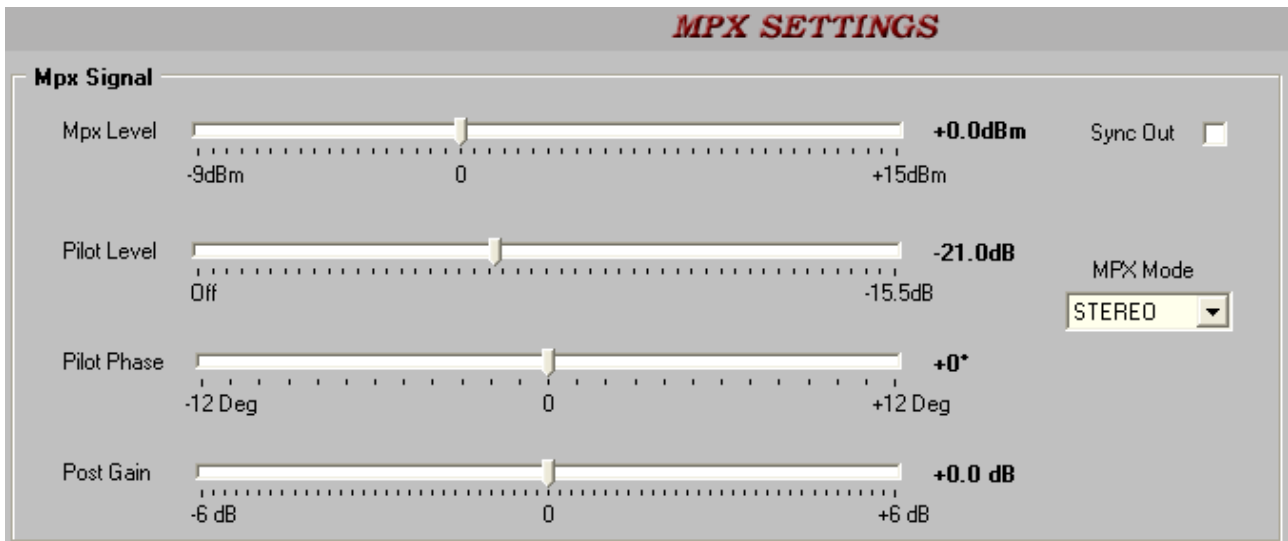
Output Mode : it sets the Barracuda operating mode:

The **Normal Operation** refers to the regular operating status, with all features available.

In the **Peak Tone Reference** mode, the Barracuda outputs a reference tone consisting of a 500 Hz / 0 dBm sinusoidal signal. This tone corresponds to the maximum frequency deviation. This is helpful for an easier transmitting chain set-up.

25.2 PILOT PHASE AND LEVEL + MPX SIGNAL LEVEL

Level and phase of the MPX Pilot are adjustable from the Smart Coder Remoter as well as from the Front Panel menu.



You may also choose between a Stereo or a Mono broadcasting using the relevant drop-down menu (**MPX Mode**). Mono mode will turn off the Pilot and associated controls.

MPX Level it adjusts the overall level of the Stereo Composite Signal (MPX) and/or RDS signal (with or without signals injected from Aux 1 and 2 mixed into). Factory preset: 0 dBm (2.2 Vpp).

PILOT Level it indicates the 19 kHz level to inject in MPX Signal in order to enable the stereo decoder in Radio receiver

PILOT Phase set the 19 KHz phase in case you need to make a fine tuning of it. Values allowed are from -12 ° to +12 °

Post Clipper Gain it adjusts the Gain after the clipping stage (see block diagram).

It may adjusted in the + / - 12 dB range, 0.1 dB steps. Default value is 0 dB. **See next paragraph.**

Synch Out if flagged, allows other RDS Generator to be driven by 19 Synch TTL signal.

25.3 MPX SIGNAL CALIBRATION – THE POST CLIPPER GAIN

The output MPX Composite signal is composed by:

- RDS signal (whenever present)
- Audio components (L+R and L-R spectrums)
- Pilot 19 kHz

RDS and PILOT are fixed (invariable) parts in the MPX signal, while Audio Components are variable ones.

To adjust MPX output level it is recommended to start with setting desired level for fixed components in the MPX signal (Pilot and RDS) and then adjust the variable part (audio) to get 75 kHz peak deviation.

STEP 1: Adjust Pilot signal level via the MPX_Pilot Menu (recommended value: – 20 dB),



STEP 2: Adjust RDS signal level via the RDS Level menu (recommended value: –31.5 dB)

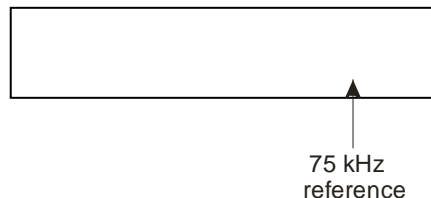


Pilot and RDS levels are expressed in Decibel (dB) with reference to the Reference Tone (500 Hz, 0 dB). If this tone is related to a Fm 75 kHz deviation, Pilot will cause a 7.5 kHz deviation (–20dB) and RDS will cause a 2 kHz deviation (–31.5 Db)

STEP 3: Once Pilot and RDS signals have been calibrated, adjust audio component via **Post Clipper Gain** control until the deviation hits 75 kHz reference :



The **100% modulation level** (correspondent to 75 kHz with 0 dB Gain on MPX level control) is indicated by the second point in the 'highlighted' Zone (see picture).



The **third point** corresponds to a **80 kHz** deviation with 0 dB Gain on MPX level control.

Higher modulation levels will cause **WARNING LED** lighting on the front panel. That LED indicates a modulation level exceeding 5 kHz the nominal one and/or a saturation on audio input stage.

STEP 4: Adjust the overall to apply the desired amplification / attenuation factor to nominal MPX level achieved at the Step 3.

26 RDS / RBDS GENERATOR – GENERAL SETUP



All info provided on this Chapter applies to both RDS and RBDS generation, unless differently noticed.



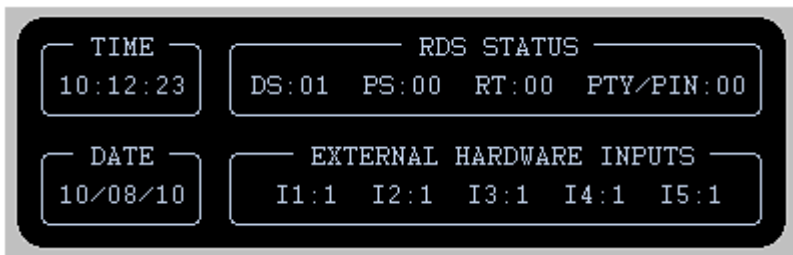
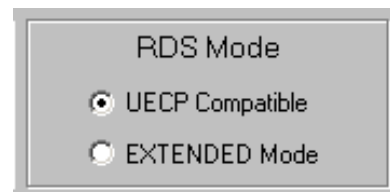
RBDS operation on the Barracuda is achieved by installing the Smart Coder Remoter control software in its RBDS version.

The RDS controls related to phase and levels are available from the Front Panel, while any other configuration about texts, RDS data, etc is achievable from Smart Coder Remoter as well as from the UECP.

Barracuda Encoder provides two different programming modes.

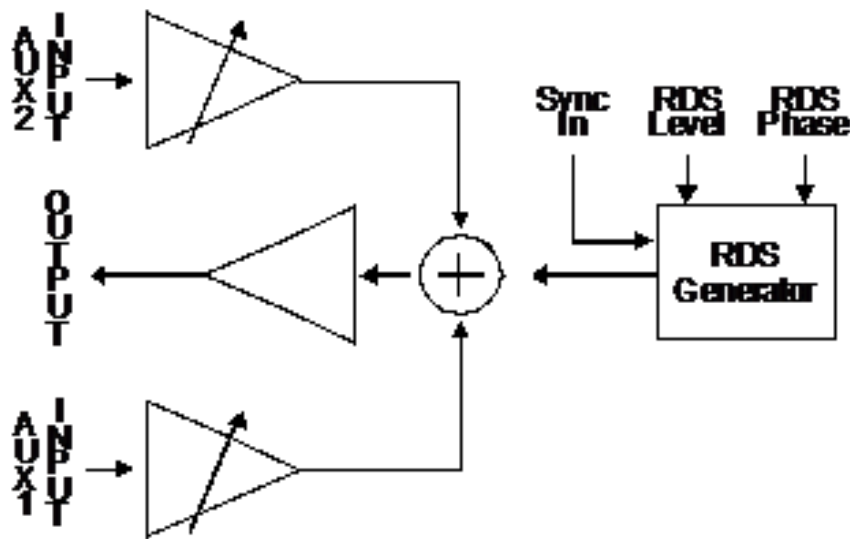
The first one is fully compliant to the last **UECP** normative.

The second one ('**Extended**') provides a wider range of features, which have been customized in order to make Barracuda encoder more versatile and suitable for the most part of user requirements. In this case some commands are **not UECP compliant**. When using the Remoter software, data configuration may be achieved in a textual / ASCII form (through the Configuration Editor) or from the regular Remoter pages.

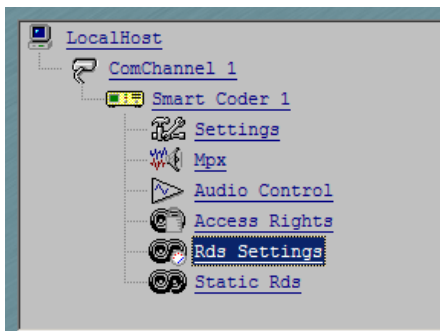


Current status of on-air RDS services can be constantly monitored from the small black screen at the upper left corner of the Smart Coder Remoter screen.

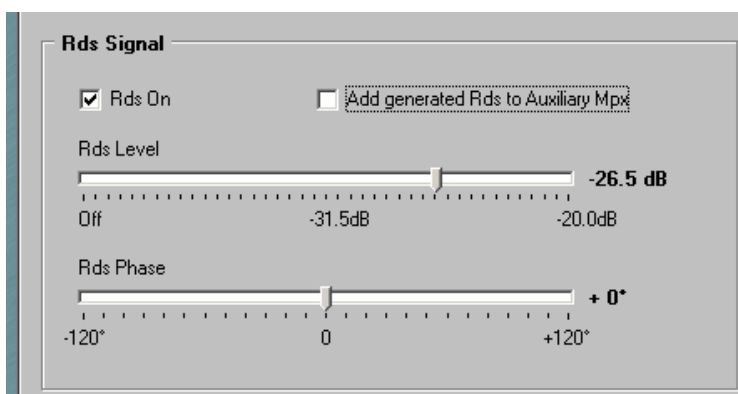
26.1 BLOCK DIAGRAM – RDS/RBDS ENCODER SIDE



26.2 GENERAL RDS / RBDS ENABLING



Open 'RDS SETTINGS' windows from the Main three:



In the relevant panel, check 'Rds On' option to enable RDS generation.

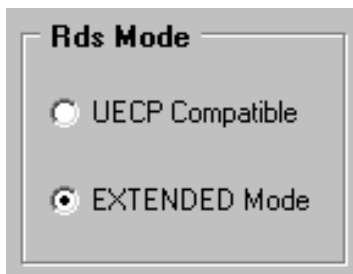
Tick the "Add generated Rds to Auxiliary Mpx" option to enable the RDS generation on the Barracuda while an external Stereo Composite MPX signal is routed to the output.

26.3 RDS PHASE AND LEVEL ADJUSTEMENT

The RDS Level cursor regulates the RDS generation level between – 43,9 (OFF) and – 20 dB, where 0 dBm corresponds to 75 KHz deviation. RDS modulator is turned off in the Off position. The following table lists the relationship between signal level and deviation. Default value is -31.5dB, which corresponds to a D=2.0 KHz deviation.

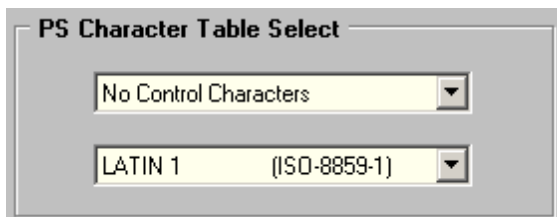
-37.5 dB	D=1.0 KHz
-31.5 dB	D=2.0 KHz
-28.0 dB	D=3.0 KHz
-25.5 dB	D=4.0 KHz
-23.5 dB	D=5.0 KHz
-21.9 dB	D=6.0 KHz

26.4 UECP OR NOT-UECP PROGRAMMING MODE



The Extended / not UECP mode carries a full-set of 'customized' features / controls which represent a valuable 'benefit' of the Barracuda. In the following pages one describes the 'extended' mode, as it contains the UECP-compliant mode, too.

26.5 CHARACTER TABLES (FOR RT, PS, PTYN SERVICES)



The Barracuda allows the user to select (with ref to CENELEC Annex E.1,E.2,E.3) the character table used in all 'textual' services, such as PS, RT, PTYN..

It also allows to add control characters, according to EBU and ISO normative.

Available character tables are the following:

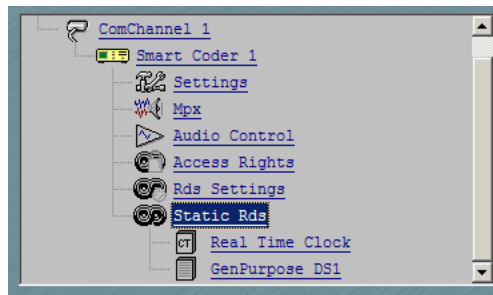
ISO 8859-1 (Latin 1)
ISO 8859-2 (Latin 2)
ISO 8859-5 (Cyrillic)

ISO 8859-7 (Greek)
ISO 8859-9 (Turkish)
ISO 8859-10 (Nordic Languages)

PAY ATTENTION TO THE CHARACTER SET IN USE. SOME LOW-PRICED RECEIVERS COULD NOT DISPLAY IN A CORRECT WAY ALL CHARACTER SETS.

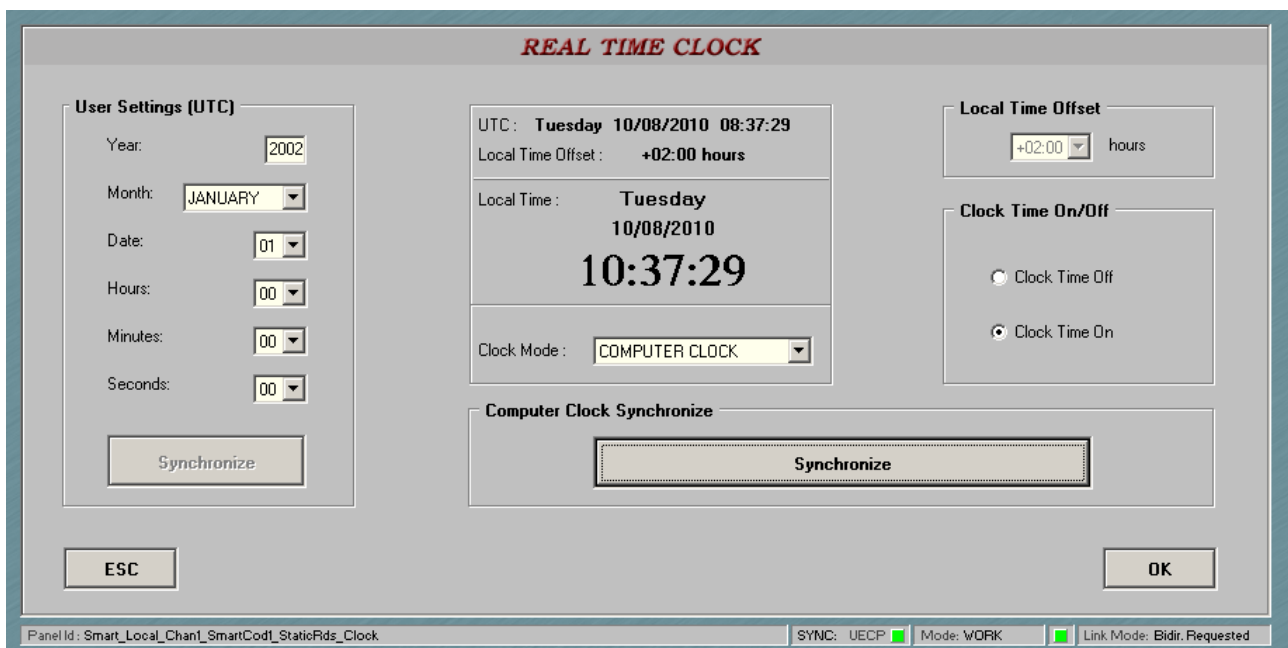
27 THE 'STATIC' RDS / RBDS

Double click the 'Static RDS' icon:



27.1 SYNCHRONIZE INTERNAL CLOCK AND ENABLE 'CT' SERVICE

Barracuda features an internal clock and calendar, that are used as reference either for PS, RT e PTY/PIN service scheduling, or for CT (Clock Time) service.



Real Time Clock panel allows the user to adjust the Target current time and date. If enabled (see CT On/Off button), this RDS feature can allow every receiver to automatically set its internal clock. Current time and date of Yr Pc is permanently shown at the center of the Panel. You can select two different time references for the Barracuda: the PC clock or an User-defined time. Selection is done through the dialog Box below the clock display:

COMPUTER CLOCK synchronizes Barracuda internal clock to actual Pc clock

USER SETTINGS allows the user to set a specific tame and date through the User Settings mask at the left of the panel (see picture below). **NOTE:** in application of the relevant CCIR Recommendations, broadcast time and date codes should use Coordinated Universal Time (UTC) and Modified Julian Day (MJD). The listener, however, will not use this information directly and the conversion to local time time and date will be made in the receiver's circuitry.

A coded local time-difference, expressed in multiples of half-hours can be appended to the User time and date codes (see **Local Time Offset** options) Click '**Synchronize**' to update Target time to the selected time reference. Make sure of the current Pc time prior to upgrade the Barracuda' clock.

CT information is carried in the 4A Group. That Group is automatically managed by the Barracuda and is NOT user-enabled.

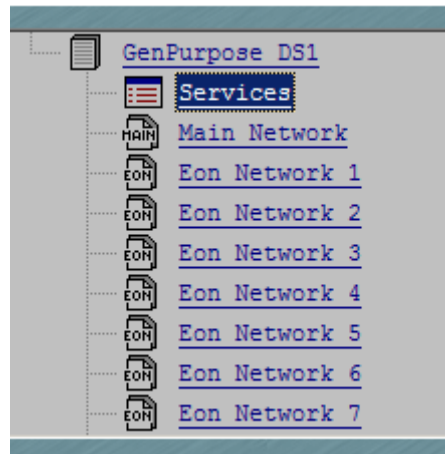
For more information about Time Sync in Barracuda see Appendix A chapter 9.5



27.2 DATASET 1 CONFIGURATION (THE ONLY DATASET AVAILABLE)

27.3 INTRODUCTION

General Purpose **DataSet 1** **GenPurpose DS1** menu comprises all the settings related to the Main network (which is broadcasting the DataSet) and to up to 10 EON (Enhanced Other Networks). It is available also another page (**Services**) for enabling/configuration of RDS services supported in the DataSet



27.4 RDS GROUP CONFIGURATION ('SERVICES' PANEL)

As in UECP protocol, *Service* panel allows you to enable single RDS services/features (f.i. PIN, RT, etc) and to compose the Group Sequence carried by the RDS signal.

GROUP SELECTION																PSN LIST	
Groups 0A 1A 2A 3A 5A 6A 7A 8A 9A 10A 11A 12A 13A 14A 0B 1B 2B 3B 4B 5B 6B 7B 8B 9B 10B 11B 12B 13B 14B 15B																	
Group Sequence ◀ 2A 10A 2A 0A 2A 0A 0A 2A 3A 0A 1A 0A 2A 0A ▶																	
Group 1A Slow Labelling Codes 0 1 2 3 4 5 6 7																	
SLC Sequence 3																	
Group 14A Variant Codes 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14																	
Group 14A Variant Sequence 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14																	
ESC																OK	
Panel Id : Smart_Local_Chan1_SmartCod1_StaticRds_GenPurposeDS1_Services																SYNC: UECP ■ Mode: WORK ■ Link Mode: Bidir. Requested	

Barracuda accepts all the listed groups and reaches a maximum of 64 elements. Only group 4A (automatically generated) and 15A (not supported) are excluded. When any group is specified, the Barracuda generates the **0A group** as default, which carries all the RDS **basic services (PS, DI, M/S, TP, TA, PTY, AF)**. The 4A group (which carries clock information CT) is automatically managed by the Barracuda and it is not user-settable.

In the event You would like to broadcast additional services to those included in the OA Group, You will need to broadcast a Group sequence. That sequence may be generated manually with DragAndDrop catching the corresponding number group in "Groups" and dragging the number in "Group Sequence"

27.5 EON / PSN SERVICES IN THE DATASET 1

	PSN List	PSN Enable
Main ->	PSN 1	<input checked="" type="checkbox"/> Enable
Eon 1 ->	PSN 2	<input type="checkbox"/> Enable
Eon 2 ->	PSN 3	<input type="checkbox"/> Enable
Eon 3 ->	PSN 4	<input type="checkbox"/> Enable
Eon 4 ->	PSN 5	<input type="checkbox"/> Enable
Eon 5 ->	PSN 6	<input type="checkbox"/> Enable
Eon 6 ->	PSN 7	<input type="checkbox"/> Enable
Eon 7 ->	PSN 8	<input type="checkbox"/> Enable
Eon 8 ->	PSN 9	<input type="checkbox"/> Enable
Eon 9 ->	PSN 10	<input type="checkbox"/> Enable
Eon10 ->	PSN 11	<input type="checkbox"/> Enable

The PSN (Program Service Number) List represents the reference List for all UECP index.

It allows to associate the various PSN (i.e. RDS configurations) to Main networks and to EON networks, so that a same UECP command (for example the TA) can be brought at the same time to each Coder no matter of the network it belongs, resulting in the TA activation on the Main network and the EON-TA activation on the linked network.

To change the PSN assignment in the PSN List You just have to click the chosen PSN and drag it on the desired position. After that, enable each individual assignment by clicking on Enable box.

For example, to assign the PSN 5 to the Eon 2 (instead of the default PSN 3), click PSN5 and drag it in the current position of PSN 3. Then enable the Eon2.

NOTE: PSN List modification can be done only on Dataset unactive.

EXAMPLE

If You have 3 RDS coders broadcasting 3 programs (Radio 1, Radio 2 and Radio3) and an unique TA - UECP command brought at the same time to each coder, PSN Lists on the 3 coders will be the following:

RADIO 1

	PSN List	PSN Enable
Main ->	PSN 1	<input checked="" type="checkbox"/> Enable
Eon 1 ->	PSN 2	<input checked="" type="checkbox"/> Enable
Eon 2 ->	PSN 3	<input type="checkbox"/> Enable
Eon 3 ->	PSN 4	<input type="checkbox"/> Enable
Eon 4 ->	PSN 5	<input type="checkbox"/> Enable
Eon 5 ->	PSN 6	<input type="checkbox"/> Enable
Eon 6 ->	PSN 7	<input type="checkbox"/> Enable
Eon 7 ->	PSN 8	<input type="checkbox"/> Enable
Eon 8 ->	PSN 9	<input type="checkbox"/> Enable
Eon 9 ->	PSN 10	<input type="checkbox"/> Enable
Eon10 ->	PSN 11	<input type="checkbox"/> Enable

RADIO 2

	PSN List	PSN Enable
Main ->	PSN 2	<input checked="" type="checkbox"/> Enable
Eon 1 ->	PSN 1	<input checked="" type="checkbox"/> Enable
Eon 2 ->	PSN 3	<input checked="" type="checkbox"/> Enable
Eon 3 ->	PSN 4	<input type="checkbox"/> Enable
Eon 4 ->	PSN 5	<input type="checkbox"/> Enable
Eon 5 ->	PSN 6	<input type="checkbox"/> Enable
Eon 6 ->	PSN 7	<input type="checkbox"/> Enable
Eon 7 ->	PSN 8	<input type="checkbox"/> Enable
Eon 8 ->	PSN 9	<input type="checkbox"/> Enable
Eon 9 ->	PSN 10	<input type="checkbox"/> Enable
Eon10 ->	PSN 11	<input type="checkbox"/> Enable

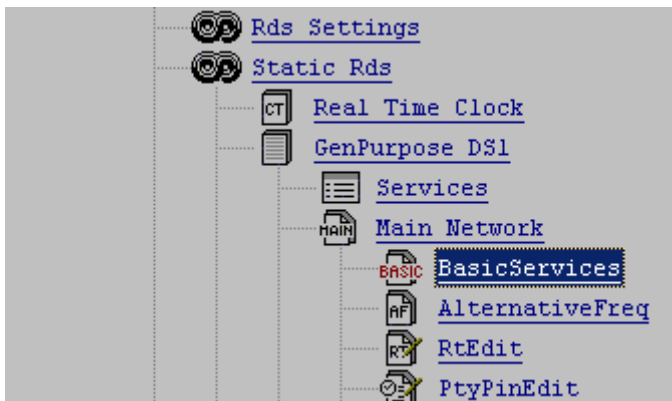
RADIO 3

	PSN List	PSN Enable
Main ->	PSN 3	<input checked="" type="checkbox"/> Enable
Eon 1 ->	PSN 1	<input checked="" type="checkbox"/> Enable
Eon 2 ->	PSN 2	<input checked="" type="checkbox"/> Enable
Eon 3 ->	PSN 4	<input type="checkbox"/> Enable
Eon 4 ->	PSN 5	<input type="checkbox"/> Enable
Eon 5 ->	PSN 6	<input type="checkbox"/> Enable
Eon 6 ->	PSN 7	<input type="checkbox"/> Enable
Eon 7 ->	PSN 8	<input type="checkbox"/> Enable
Eon 8 ->	PSN 9	<input type="checkbox"/> Enable
Eon 9 ->	PSN 10	<input type="checkbox"/> Enable
Eon10 ->	PSN 11	<input type="checkbox"/> Enable

EON Fast Switch option (group 14B) shall be selected when a large number of groups (either Main or EON) is broadcast, in order to make more timely a change in the status of the TA flag of a cross-referenced programme service.

Some early RDS EON consumer receivers may need up to four correct type 14B groups for reliable functioning. Therefore, if manual group mode has been selected, it is recommended to broadcast as many as possible of up to 8 type 14B groups, in order to ensure the detection of the TA switching under bad reception conditions.

27.6 PI - PROGRAM IDENTIFIER -



Main Network Panel contains all the settings related to the RDS signal that is currently being transmitted.

A double click on Main Network icon will disclose a sub-tree providing the following panels: Basic Services, Alternative Frequencies, Rt (Radio Text) Edit, PinPtyEdit, PsnEdit, Scheduler.

Access the BasicServices page

27.6.1 THE 'PROGRAM IDENTIFIER' CODE IN THE RDS MODE

Country Group PI: IT,JO,SK	Coverage Area NATIONAL	Ref 082	Code 5252
Linkage Informations LA: OFF EG: OFF ILS: OFF LSN: 000			
Music / Speech M/S: MUSIC	Decoder Identification DI: STEREO, STATIC PTY		
Traffic Programme TP: ENABLED	Traffic Announcement TA: DISABLED		

PI PROGRAMME IDENTIFICATION contains four hexadecimal numbers (see 'Code' box): the first one assigns the broadcast country and it is automatically provided from the Remoter software application by clicking the country acronyms (see Country Group). The second hexadecimal number assigns the coverage area profile (I.e. national , local etc.) Click on the most suitable item inside the Coverage Area window and the application provides the hexadecimal corresponding number. The 'Ref' window contains a number from 1 to 255 (normally assigned from the law authorities to the broadcaster).

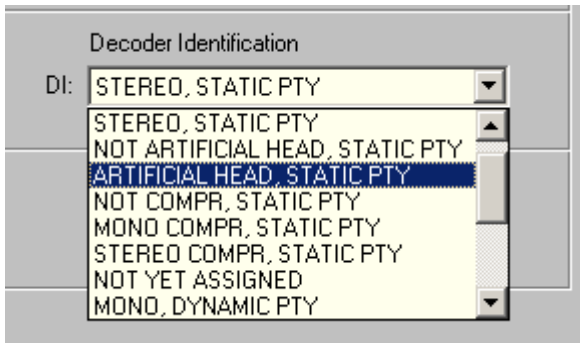
If the entire hexadecimal code is already known, enter it into the 'Code' box.

27.6.2 THE 'PROGRAM IDENTIFIER' CODE IN THE RBDS MODE

Country Group PI: Not Available	Coverage Area Not Available	Ref NA	Code 5000
Linkage Informations LA: OFF EG: OFF ILS: OFF LSN: 000			
Music / Speech M/S: MUSIC	Decoder Identification DI: STEREO, STATIC PTY		
Traffic Programme TP: DISABLED	Traffic Announcement TA: DISABLED		

PI PROGRAMME IDENTIFICATION contains four hexadecimal numbers (see 'Code' box). **The hexadecimal code must be typed into the 'Code' field: it will be broadcast 'as is'.**

27.7 DI -DECODER IDENTIFICATION-



DI DECODER IDENTIFICATION

this pull-down menu allows you to identify the kind of modulation (Stereo, Mono, etc). Stereo modulation is assigned to STEREO, STATIC PTY, while mono is MONO, STATIC PTY.

Click OK/Send to confirm or Esc to quit without saving.

27.8 'LINKAGE' INFORMATION (LA, EG, ILS, LSN)

They are accessible in the 'Basic Services' panel.



Linkage information provides the means by which several programme services, each characterised by its own PI code, may be treated by a receiver as a single service during times a common programme is carried.

During such times each programme service retains its unique identity, i.e. the programme service must keep its designated PI code and its AF (Alternative Frequency) list(s), but may change programme related features such as PS, PTY, RT, TP and TA to reflect the common programme;

With LA=1, a service carrying codes TP=1 or TP=0/TA=1 must not be linked to another service carrying the codes TP=0/TA=0.

Linkage information is conveyed in the following four data elements:

- 1) LA - Linkage Actuator (1 bit)
- 2) EG - Extended Generic indicator (1 bit)
- 3) ILS - International Linkage Set indicator (1 bit)
- 4) LSN - Linkage Set Number (12 bits)

27.9 TP, TA, MS CONFIGURATION & THEIR REMOTE CONTROL

Open the 'Basic Services' page in the Main Network (see also previous paragraph).



TP - Traffic Programme is a flag to indicate that the tuned programme carries traffic announcements. The TP flag must only be set on programmes which dynamically switch on the TA identification during traffic announcements. It can be set as Disabled or Enabled.

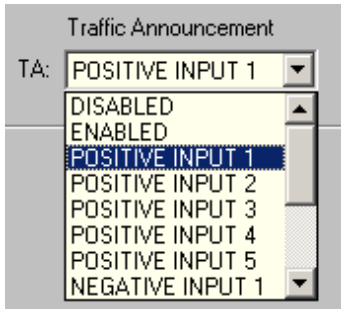
TA - Traffic announcement identification is an on/off switching signal to indicate when a traffic announcement is on air. To enable it, see next lines.

TA and M/S 'status may be:

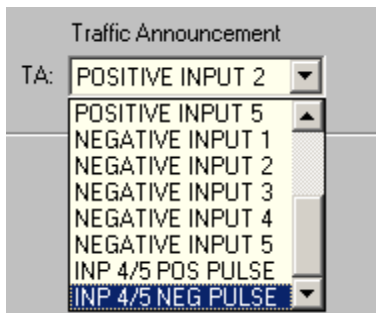
- **Fixed** (enabled / disabled)



- Associated to relevant **UECP** command
- Associated to the status of one of 5 inputs on the *Opto Input* port

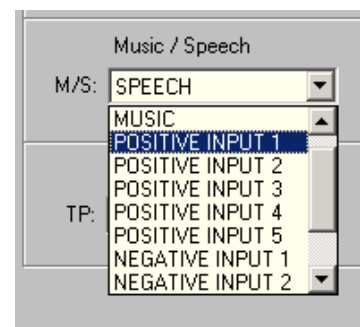
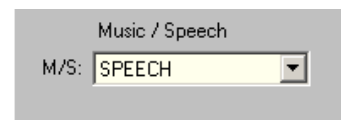
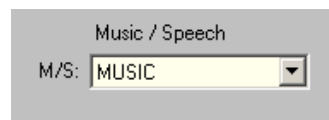


- Associated to the impulsive commands (100 ms duration) applied to inputs 4 and 5 on the *Opto Input* port



M/S - Music/Speech is a two-state signal to provide information on whether music or speech is being broadcast. The signal would permit receivers to be equipped with two separate volume controls, one for music and one for speech, so that the listener could adjust the balance between them to suit his individual listening habit

Refer to Appendix A of this manual for OPTO INPUT interface pin-out.



TA, TP and MS services are included in the Basic Services packet group

27.10 SLOW LABELING CODES

<i>SLOW LABELING CODES</i>		
SLC Data (12 bits)		
SLC 0	000	Extended Country Code
SLC 1	000	TMC Identification
SLC 2	000	unsupported
SLC 3	000	Language Codes
SLC 4	000	not assigned
SLC 5	000	not assigned
SLC 6	000	For use by broadcasters
SLC 7	000	EWS Channel ID

Slow Labeling Codes, as broadcast on 1A Group, are typed in Slow Labeling Codes in the Basic Services page.

27.11 ALTERNATIVE FREQUENCIES

ALTERNATIVE FREQUENCIES

FM FREQUENCIES (MHz)

88.1	89.1	91.1	93.1	95.1	97.1	99.1	101.1	103.1	105.1	107.1
88.2	89.2	91.2	93.2	95.2	97.2	99.2	101.2	103.2	105.2	107.2
88.3	89.3	91.3	93.3	95.3	97.3	99.3	101.3	103.3	105.3	107.3
88.4	89.4	91.4	93.4	95.4	97.4	99.4	101.4	103.4	105.4	107.4
88.5	89.5	91.5	93.5	95.5	97.5	99.5	101.5	103.5	105.5	107.5
87.6	88.6	90.6	92.6	94.6	96.6	98.6	100.6	102.6	104.6	106.6
87.7	88.7	90.7	92.7	94.7	96.7	98.7	100.7	102.7	104.7	106.7
87.8	88.8	90.8	92.8	94.8	96.8	98.8	100.8	102.8	104.8	106.8
87.9	88.9	90.9	92.9	94.9	96.9	98.9	100.9	102.9	104.9	106.9
88.0	89.0	91.0	93.0	95.0	97.0	99.0	101.0	103.0	105.0	107.0

AF 1	AF 2	AF 3	AF 4	AF 5	AF 6	AF 7	AF 8
107.9	99.6	95.5					
107.6	99.6						
107.9	100.2						
96.2	99.6						
107.9	104.4						
90.6	99.6						
107.9	106.7						
96.3	99.6						
107.9	106.8						
95.1	99.6						
107.9	106.5						
	99.6						
	100.2						
	98.2						
	99.6						

ESC

U
B
R

U
B
R

U
B
R

U
B
R

U
B
R

U
B
R

U
B
R

Send

AF Lists

- ☒ AF 1-8
- ☐ AF 9-16
- ☐ AF 17-24
- ☐ AF 25-32
- ☐ AF 33-40
- ☐ AF 41-48
- ☐ AF 49-56
- ☐ AF 57-64

The list(s) of **Alternative Frequencies (AF)** give information on the various transmitters broadcasting the same programme in the same or adjacent reception areas. This facility is particularly useful in the case of car and portable radios.

NOTE: Overall 500 alternative frequencies max can be entered for each DataSet.

The alternative frequencies (**AF**) list can be transmitted following two methods:

A Method and B Method

In both cases, lists should only contain frequencies related to the closest transmitters (i.e. frequencies with overlapping between coverage areas).


NOTE: receivers are able to get which Method (A or B) is used from their data organization (coupled frequencies or single frequencies). There is any direct 'identifier' for that.

The Barracuda offers to the user the max freedom in using Method A or Method B in the list composition and, in particular, whether freq pairs are listed in descending or ascending order within the B Method.

Receiver's behaviour could differ from one model to the other. The examples shown in these pages are for information purpose only and to present Barracuda potentialities in the AF programming. Refer to Cenelec normative for a complete treatment on AF programming.

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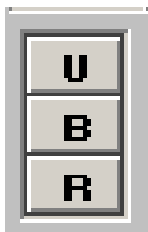
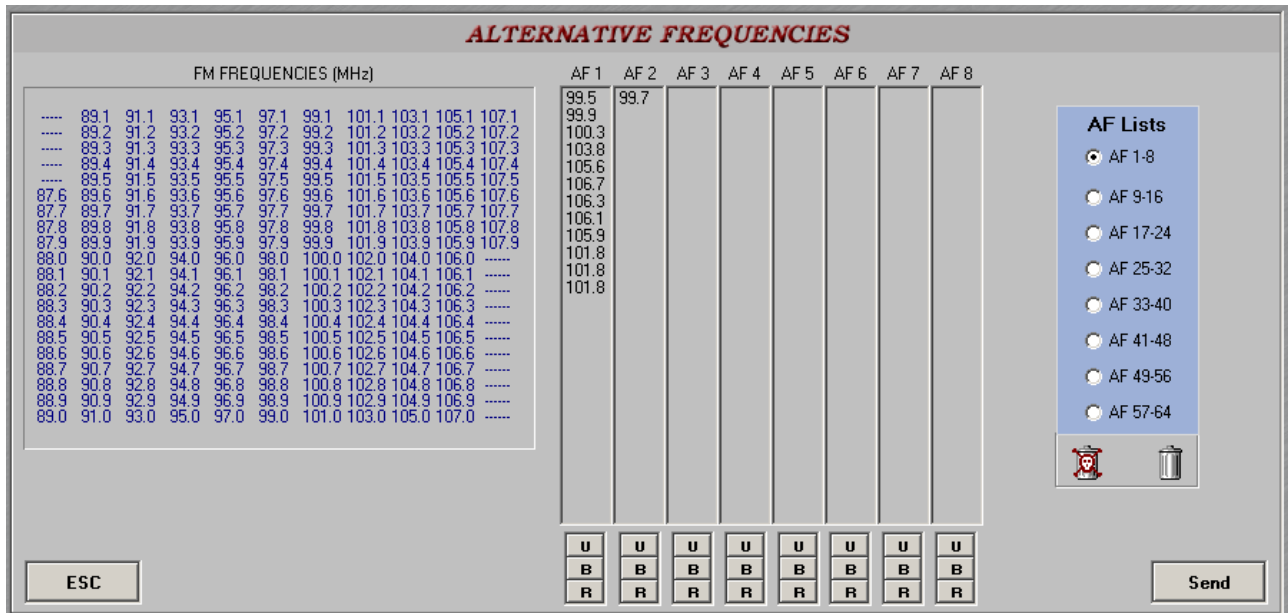
Axel Technology srl
www.axeltechnology.com



27.12 HOW TO COMPOSE AF LISTS

First loading method (Drag & Drop) Select the AF from the available frequencies in the left window by clicking left it and drag & drop it into the AF list. Release the mouse left button to 'drop' the frequency into the desired AF list.

Second loading method (preselected AF list) Highlight the AF list to be loaded by clicking on it. The selected column will turn red with a bright tone. At this point, double click desired items on the general list: they will automatically appear into the highlighted AF list.



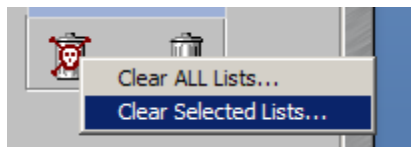
- "U" button Arrange AFs
- "B" create Method B AF list
- "R" restore AF previous order



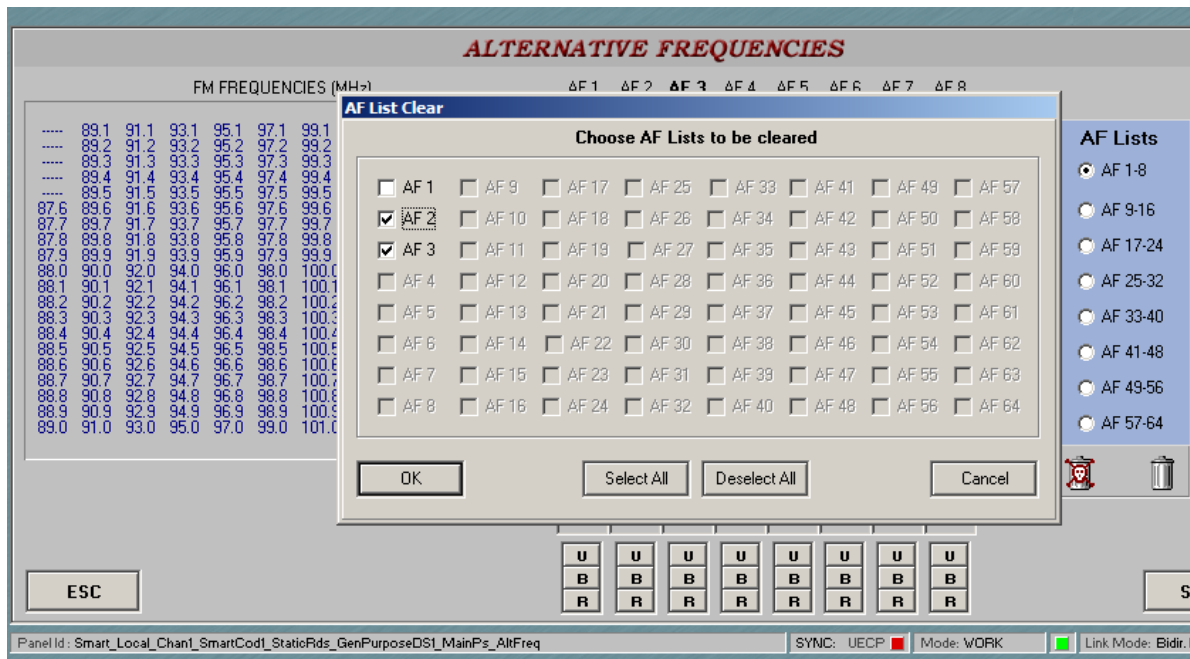
Clicking RIGHT You can remove ALL frequencies from the highlighted list or from ALL the lists.

Lists containing at least one item (i.e. not empty) are shown in blu color.

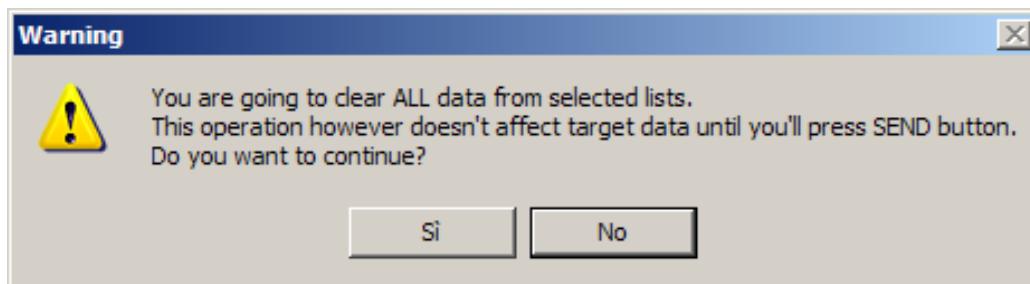
- To remove a frequency from the list, click LEFT and then drag **it onto the 'trash' icon** (alternatively, click 'Canc' button). By clicking with the Right button of the mouse on the skeltor trashed it's possible to delete only a list of AF Frequency



Then it's possible to select the AF List to delete and pressing OK delete it.



A Warning message is showed to remind that you are deleting **ONLY** in the DataBase Manager, so if you need to send information right now you have to Press **SEND**.



27.13 AF METHODS A AND B

There are two ways to transmit lists of alternative frequencies: Method A and Method B.

In both cases the lists should include only those frequencies for the nearest transmitters and repeaters (with overlapping coverage areas).

Generally speaking, Method A is used when the list contains no more than 25 frequencies, and Method B when the list is longer (for a maximum of 24 lists).

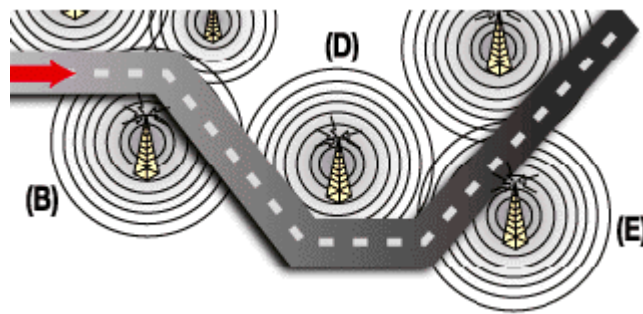
Method B is recommended when splitting areas or when different programs are broadcast.

NOTE: use of encoding method A or B is not explicitly assigned by a dedicated signal to the receiver, as the latter is capable of identifying which method is used by analyzing the transmitted data structure (whether or not they are organized in pairs).

METHOD A

Compile the AF1 list assigning the tuning frequency (i.e. the frequency carrying the list of alternative frequencies) in the first position, and then continue in strictly increasing order with the alternative frequencies transmitting exactly the same program.

We recommend recording the alternative frequencies (those of adjacent transmitters and repeaters with overlapping coverage areas) on each transmitter, being careful that the first position indicates the frequency carrying the list of alternative frequencies.



For example, in the situation shown in the figure three transmitters (B, D, E) intersect only in two coverage areas: between B and D, and between D and E. The following lists should be loaded in each transmitter:

Tx B lists (tuning frequency: f Tx B)	AF1	AF2	Note that the frequency of transmitter C is not included in the list, since the latter's coverage area does not overlap with that of transmitter A
	f Tx B f Tx D	f Tx D f Tx B	
Tx D lists (tuning frequency: f Tx D)	AF1	AF2	Coverage area D partially overlaps that of both transmitters B and E, and thus it is recommended to load the lists for both adjacent transmitters. Be careful to list all frequencies above the tuning frequency in ascending order.
	f Tx D f Tx B f Tx E	f Tx B f Tx D	
		f Tx E	
Tx E lists (tuning frequency: f Tx E)	AF1	AF2	Note that the frequency of transmitter B has not been included in the list, since its coverage area does not overlap with that of transmitter E.
	f Tx E f Tx D	f Tx D f Tx E	

METHOD B

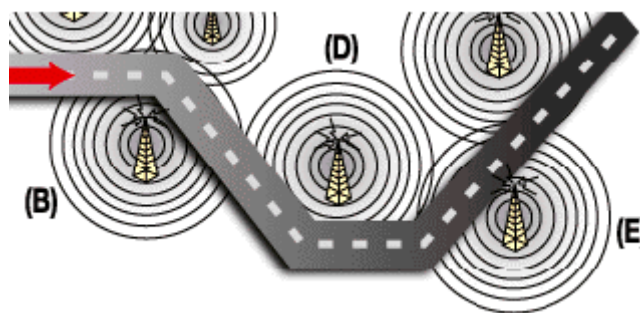
As mentioned earlier, Method B is used with high numbers of alternative frequencies and/or when the transmitter also has frequencies that broadcast different radio program at various times of day (splitting, local programming, etc.).

In the latter instance, the mobile receiver should check whether the AF is broadcasting the same content before selecting another frequency.

Each list begins with the *tuning* frequency (for which the list is valid) and then contains up to 12 **pairs of frequencies** in sequence, each containing the *tuning* frequency and an alternate. If there are more than 12 possible alternative frequencies, the list continues in other lists in the same manner.

The order of the frequencies in each pair follow the rules below:

- If the order is increasing, the alternative frequency broadcasts the same programming as the *tuning* frequency.
- If the order is decreasing, the two frequencies have different programming.



Returning to the example of transmitters B, D and E in the previous paragraph (in which the coverage areas of D and E do not overlap), two more lists will be assigned to transmitter B, sorted according to the above criteria to take into account any different programming by some of the AFs.

Tx B (tuning frequency: f Tx B)	AF1	AF2	Notice that the tuning frequency f Tx B is repeated twice in list 1: in the first position, then paired with f Tx D. Tx B broadcasts the same program as D if $f_{Tx B} < f_{Tx D}$, and different programs if $f_{Tx B} > f_{Tx D}$.
	f Tx B	f Tx D	
	f Tx B	f Tx D	
	f Tx D	f Tx B	

The AF lists for the other transmitters are compiled according to the same criteria, alternating the frequency pairs. NOTE: if the same tuning frequency is used by more than one transmitter within the same network, the corresponding AF lists must not be consecutive (for instance AF 1 and AF 2). Lists for different tuning frequencies must be placed between them.

27.14 RADIOTEXT PANEL

Once You have selected the Radio Text panel, You can be enter up to 16 Radio Text messages, each one having up to 64 characters (spaces included). This refers to text transmissions, primarily addressed to consumer home receivers, which would be equipped with suitable display facilities. This feature can be used to display cyclic messages, too.

RT No.	RADIOTEXT FIELD	Iterations	A/B Flag
Main RT	RAI -RADIOTELEVISIONE ITALIANA-	01	ON
RT 1	CENTRO RADIO SAXA RUBRA	00	OFF
RT 2	-ROMA-	00	OFF
RT 3		00	OFF
RT 4		00	OFF
RT 5		00	OFF
RT 6		00	OFF
RT 7		00	OFF
RT 8		00	OFF
RT 9		00	OFF
RT 10		00	OFF



ITEM #	RADIOTEXT	Iterations	A/B Flag
RT 3		00	OFF

NOTE: only the MAIN RT field can be programmed accordingly to the UECP protocol. The other fields (from RT01 to RT15) are related only to the UECP Extended (custom) RDS programming mode

Rds Mode

- ☐ UECP Compatible
☒ EXTENDED Mode

To enter RadioTexts:

- select a field (MAIN RT, RT01, RT02, etc) clicking on the 'yellow' zone: the selected field will be displayed at the bottom of the window
- select and delete the text displayed by default (f.i. RADIOTEXT 04)
- type the new Radio Text message (64 char max) into the field at the bottom
- click the 'Update' button  to update the message or click  to discard it.

NOTE: Main Radio Text message (also indicated as RT 00) is broadcast by default. The SCHEDULER panel schedules many RT sequences.

Please, remind to enable RT group in the Main RDS SERVICE panel.

Group Sequence
◀ 0A 0B 1A 2A 2B 5A 3B

The group name for RT is 2A

27.15 PIN – PTY SERVICES

PIN / PTY EDITOR allows you to set up to 32 different Pin / Pty / Ptn items.

	DAY	HOUR	MIN	PROGRAM TYPE	PROGRAM TYPE NAME
Main Pty/Pin	00	00	00	NO PROGRAMME TYPE	
PTY/Pin 1	00	00	00	NO PROGRAMME TYPE	
PTY/Pin 2	00	00	00	NO PROGRAMME TYPE	
PTY/Pin 3	00	00	00	NO PROGRAMME TYPE	
PTY/Pin 4	00	00	00	NO PROGRAMME TYPE	
PTY/Pin 5	00	00	00	NO PROGRAMME TYPE	
PTY/Pin 6	00	00	00	NO PROGRAMME TYPE	
PTY/Pin 7	00	00	00	NO PROGRAMME TYPE	
PTY/Pin 8	00	00	00	NO PROGRAMME TYPE	
PTY/Pin 9	00	00	00	NO PROGRAMME TYPE	

PIN: Day Hour Minute PTY PTYN

Main Pty/Pin 00 00 00 NO PROGRAMME TYPE

- PIN - Programme Item Number

The PIN code should enable receivers and recorders designed to make use of this feature to respond to the particular programme item(s) that the user has preselected. Use is made of the scheduled programme time, to which is added the day of the month in order to avoid ambiguity.

- PTY - Programme Type



This is an identification number to be transmitted with each programme item and which is intended to specify the current Programme Type within 31 possibilities. This code could be used for search tuning. The code will, moreover, enable suitable receivers and recorders to be pre-set to respond only to programme items of the desired type. The last number, i.e. 31, is reserved for an alarm identification which is intended to switch on the audio signal when a receiver is operated in a waiting reception mode.

- PTYN - Programme Type Name

The PTYN feature is used to further describe current PTY. PTYN permits the display of a more specific PTY description (max 8 characters) that the broadcaster can freely decide (eg PTY=4: Sport and PTYN: Football). The PTYN is not intended to change the default eight characters of PTY which will be used during search or wait modes, but only to show in detail the programme type once tuned to a programme. If the broadcaster is satisfied with a default PTY name, it is not necessary to use additional data capacity for PTYN. The Programme Type Name is not intended to be used for automatic PTY selection and must not be used for giving sequential information.

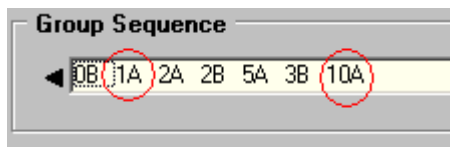
NOTE: the MAIN PTY only can be programmed accordingly to the UECP protocol. The other fields (from PTY/PIN 01 to PTY/PIN 31) are related to the **UECP Extended** (custom) RDS programming mode.

To enter PTY/PIN:

- select a field (MAIN PTY, PTY01, PTY02, etc) clicking on the 'yellow' zone: the selected row will be displayed at the bottom of the window (f.i., the picture here above shows PTY 1 selection).
- Select PIN Date/Time (Day, Hour, Min) and PTY from the list. Type an additional PTYN (8 char max) into the field at the bottom.
- click the 'Update' button  to update the data or click  to discard it.

NOTE: Main PTY/PIN (also indicated as PTY 00) is broadcast by default. The SCHEDULER panel (see NEXT PAGES) allows You to schedule many PTY sequences.

Please, remind to enable PTY and PTYN groups in the Main RDS SERVICE panel The group number are for PTY 1A and for PTYN 10A



PTY CODE	PROGRAM TYPE
0	No program type o indef.
1	News
2	Current affairs
3	Information
4	Sport
5	Education
6	Drama
7	Culture
8	Science
9	Varied
10	Pop Music
11	Rock Music
12	M.O.R. Music
13	Light classical
14	Serious classical
15	Other Music
16	Weather

PTY CODE	PROGRAM TYPE
17	Finance
18	Children's programs
19	Social Affairs
20	Religion
21	Phone In
22	Travel
23	Leisure
24	Jazz Music
25	Country Music
26	National Music
27	Oldies Music
28	Folk Music
29	Documentary
30	Alarm Test
31	Alarm

27.16 PROGRAM SERVICE NAME (PSN)

PSN - Program Service Name is a text consisting of not more than 8 alphanumeric characters which is displayed by RDS receivers in order to inform the listener what programme service is being broadcast by the station to which the receiver is tuned. An example for a PS name is "Radio 21" or "RAI" then "ISORADIO" then "FM_103.3" then "RADIO". The Programme Service Name is not intended to be used for automatic search tuning.

Smart Coders Remoter - Smart Coders 1

TIME: 11:40:17 | DATE: 10/08/10 | RDS STATUS: DS:01 PS:00 RT:00 PTY/PIN:00 | EXTERNAL HARDWARE INPUTS: I1:1 I2:1 I3:1 I4:1 I5:1

USER1 USER2 USER3 | OPEN PANEL CLOSE PANEL DIRECT LINK

PROGRAM SERVICE NAME EDITOR

PS No.	PROGRAM SERVICE NAME	PS SPEED
Main PS	RAI	NORMAL
PS 1	ISORADIO	NORMAL
PS 2	FM 103.3	NORMAL
PS 3	RADIO	NORMAL
PS 4		NORMAL
PS 5	PSNAME05	NORMAL
PS 6	PSNAME06	NORMAL
PS 7	PSNAME07	NORMAL
PS 8	PSNAME08	NORMAL
PS 9	PSNAME09	NORMAL
PS 10	PSNAME10	NORMAL
PS 11	PSNAME11	NORMAL



Main PS: RAI | PS SPEED: NORMAL

ESC OK

Panel Id: Smart_Local_Chan1_SmartCod1_StaticRds_GenPurposeDS1_MainPs_PSEdit | SYNC: UECP | Mode: WORK | Link Mode: Bidir. Requested

NOTE: MAIN PSN only can be programmed accordingly to the UECP protocol. The other fields (from PS1 to PS59) are related to the **UECP Extended** (custom) programming mode.

To enter PSNs:

- select a field (MAIN PSN, PSN1, PSN2, etc) clicking on the 'yellow' zone: the selected field will be displayed at the bottom of the window (f.i., the picture here above shows PSN 4 selection).
- select and remove the text displayed by default (f.i. PSNAME 03) from the field at the bottom
- type the new PS Name (8 char max)
- click the 'Update' button  to update the message or click  to discard it.

NOTE: Main PSN (also indicated as PS 00) is broadcast by default.
The SCHEDULER panel allows You to schedule many PS sequences.

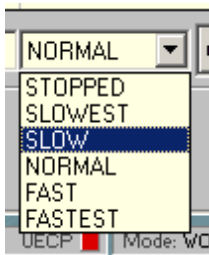
27.17 VARIABLE PS - BASIC OPERATION

Here below are provided some basic tools for the management of variable PS. For an advanced PS scheduling / programming please refer to Scheduler panel (next paragraph).

27.17.1 PS SEQUENCES

UECP Extended mode of Barracuda allows You to easily create and broadcast sequences composed by up to 60 PS Names. For each PS, You can also set its 'display speed' (related to the time it will last on the receiver display).

To enter the single PSNs componing the sequence, please refer to the previous page.



A different 'display rate' can be set for each message. Available options are listed in the PSN SPEED pop-up menu (**slowest, slow, normal, fast and fastest**).

NOTE: the time needed for a receiver to properly receive and display a message is dependent upon the following:

- numbers of characters in the message
- repetition rate of data group / overall number of groups carried out by RDS signal
- reception conditions at the receiver
- software implementation of PS feature

Further to these conditions, it is not possible to set a precise time duration for each PSN (i.e. number of seconds). Any way, 'normal' rate factor corresponds to an average display time of around 3 seconds. Please remind that *fast* and *fastest* rate factors are advisable only whenever a large number of groups is carried out by RDS signal. See also 'Warning' note at the end of this Paragraph.

The '**Stopped**' option allows You to keep constantly displayed a specific PSN. This feature is very useful when many PS sequence are scheduled through the Scheduler panel (see next paragraph). Please make sure no stopped PSN are set in the middle of a PS sequence.

PS No.	PROGRAM SERVICE NAME
Main PS	RAI
PS 1	ISORADIO
PS 2	FM 103.3
PS 3	RADIO
PS 4	

To create a default sequence, You have just to select the last item of it, as the first item is set by default (Main PSN).

F.i., accordingly to the settings as in the picture here closed the PS sequence broadcast at all time will be: RAI / ISORADIO / FM 103.3 / RADIO

27.17.2 THE SCHEDULER

Event #	Item Type	Item #	Ps End	Hour	Min	Day	Month	Year	Mo	Tu	We	Th	Fr	Sa	Su	Enabled
Event 1	PS	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	YES
Event 2	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO
Event 3	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO
Event 4	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO
Event 5	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO
Event 6	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO
Event 7	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO
Event 8	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO
Event 9	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO
Event 10	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO
Event 11	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO
Event 12	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO

Event 1 PS 00 -- ALL ALL ALL ALL ALL OFF OFF OFF OFF OFF OFF OFF YES

Program Service: "RADIO 1"

ESC Send

Scheduler enables you to organize RDS broadcast on a 'round the clock' daily, weekly, and monthly basis. You use Scheduler to make Barracuda broadcasting / changing specific RDS features (PS, PTY/PIN) at specific times and dates.

The changes to a schedule are immediately saved and implemented. Your scheduling work goes into effect (i.e. 'on air') in max 1 minute.

The basic unit of the Event Scheduler is the **event**, which is an RDS feature (PS, PTY/PIN) that can be configured to launch automatically at a specified time and date or to launch cyclically at a specified interval.

The Events have two properties that define how they work: operational properties and chronological properties. Operational properties determine what the Event does (i.e. the type of event) and Chronological properties determine when the Event **launches**.

Scheduler programming capabilities are very flexible, allowing you to set the duration of each event, from 1 minute to 365 days per year, in 1 minute increments. Up to 64 events can be stored in the Barracuda memory. Event Scheduler provides the **capability to configure four types of event (PS, PTY/PIN) to occur at any time**.

Some examples are listed below:

- You can schedule a new PSName to be on air at a aspecified interval (f.i. form 6:00 to 12:00).
- You can schedule a specific PTY to launch at 14:00 every morning

Barracuda will investigate every minute for a new scheduled event and will activate it. A new scheduled event may be therefore broadcast within 1 minute. Please note that Barracuda will scan scheduled events from the bottom to top of the Scheduler table. It means: if two events are partially or fully overlapped in the time, Barracuda will execute the event with the highest index (see NEXT pages). YOU WILL NEED THE BARRACUDA CLOCK ALWAYS 'ON-TIME' TO GET THE MOST RELIABLE SCHEDULER OPERATION

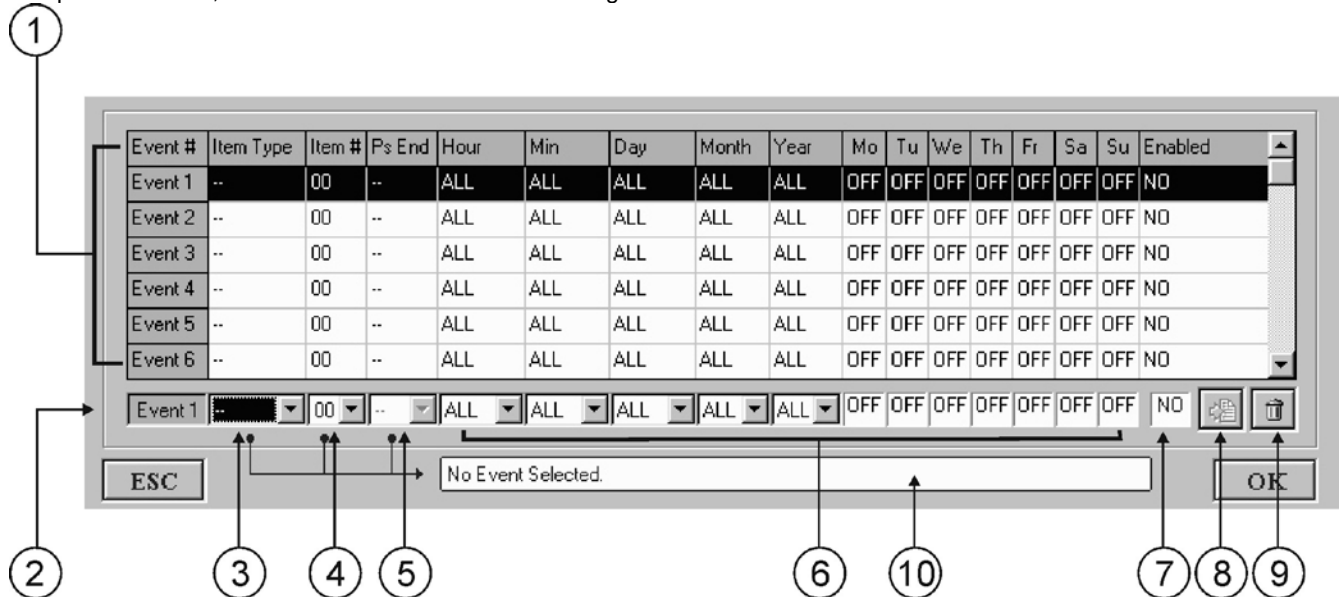
You can activate or deactivate any single event at any time using the *Enable* option provided for each event.

NOTE:

- Change between 12- and 24-hour format is not available
- A cross-referenced Preview Bar is provided: this is a quick way to find out which item You are scheduling

This section provides you with a general working knowledge of the Scheduler features and a step-by-step programming instructions. In particular, it describes how to insert the items (PS Names, etc) that you have already created into blank event slots (rows) in the Schedule Table.

To open Scheduler, click the Scheduler icon on the Navigation tree.



SCHEDULER OVERVIEW

- 1 **Event rows** Each Event row provides complete information about the event type, and scheduled day, month, date and year.
- 2 **Edit Bar** The Edit Bar allows you to set/edit properties of the highlighted event (event type, launch time and date, etc)
- 3 **Item Type** 2 different RDS features (PS, PTY/PIN) can be scheduled. Item Type menu allows You to assign a new event to one of these four features.
- 4 **Item #** It indicates the specific RT, PS, PTY item scheduled (f.i. PSN number 6)
- 5 **Ps End** In case the Event is a Ps Sequence, *Item #* field shows the first element of the sequence and *Ps End* field the last one
- 6 **Calendar** The Calendar is a collection of menu allowing you to set a specific time and date or at a specific interval for the selected event. Daily scheduling facilities are also provided.
- 7 **General enabling** It shows the general status of the event. If not enabled, the Event is not taken into consideration by the Scheduler application.
- 8 **Update button** Once You have programmed a new Event, Update button allows You to update it into Target and Scheduler table (Event rows)
- 9 **Delete button** Deletes all the properties of the Event currently displayed on the Edit Bar.
- 10 **Preview Bar** It is cross-referenced to PTY and PSN Editor, so that it shows the contents of the item to be scheduled.

27.17.3 GETTING STARTED

Make sure that the clock shows the current time correctly.
Highlight the event to be programmed by clicking on the 'yellow' field of Event rows: the selected event will be loaded in the Edit Bar, at the bottom of the panel.

Picture shows Event 2 selection.

Event #	Item Type	Item #	Ps End
Event 1	PS	01	03
Event 2	PS	04	08
Event 3	PS	04	08
Event 4	PS	04	08
Event 5	PS	04	08

27.17.4 SELECTING AN ITEM TYPE

In this step, select the type of event(s) to be executed from the list of available items (PS, PTY/PIN,).
Clicking the drop down arrow next to the *Item Type* field will display a pull-down menu. Item Type may be picked from this menu.

27.17.5 SELECTING THE ITEM NUMBER

Having set the RDS feature to be scheduled, *Item Number* menu allows You to choose a particular PSN, or PTY Item (f.t., PSN number 4 or RT number 7).

PS End menu allows You to select the last Item of **PS Sequences**

EXAMPLE 1

You want to schedule the PSN Sequence **RADIO / LONDON / INTNL**.
PSN Editor panel resembles the image here below

PSN No.	PROGRAM SERVICE NAME
Main PSN	RADIO
PSN 1	LONDON
PSN 2	INTNL

Scheduler panel should be configured as in the picture (NOTE: MAIN PSN is also called PSN 00)
Preview Bar will show the first and last item composing the sequence.

EXAMPLE 2

If You want to broadcast just one PSN (f.i. the PSN # 00) and **PSN Editor** panel (see par. 3.16) resembles the image here attached

PSN No.	PROGRAM SERVICE NAME
Main PSN	RAI MF 1
PSN 1	PSNAME01
PSN 2	PSNAME02

Scheduler panel should be configured as in the picture
(*PS End* field is left blank - i.e. it will display the symbol --)

27.17.6 SETUP THE SCHEDULE TIME AND DATES

The Calendar zone allows You to set the date and the time the scheduler should execute the event(s). Selecting the drop down arrow next to the date fields will display specific Hour/Minute/Day/Month/Year menu. The date or time interval may be picked from this menu.

Barracuda scheduler operates on a time-matching basis. It means, at the beginning of every 'minute' (i.e. when internal clock reaches XX:XX:00) Barracuda will compare the present time with all the scheduled event start times and will activate those events where start time match the current one

The **HOUR** Menu provides the following options:

- Single Hours** Event launches any time clock hour matches the chosen one
- Time Interval** Event launches any time clock hour matches every hour inside the chosen interval
- ALL** Event launches regardless of clock hour

The **MIN** Menu provides the following options

- Single Minutes** Event launches any time clock minute matches the chosen one
- Time Interval** Event launches any time clock minute matches every minute inside the chosen interval
- Star symbol(*) + Minute digit** Star (*) symbol indicates that first minute digit (0,1,2,3,4,5) is not crucial, so that the event launches any time clock minute matches only the chosen second digit
See next Examples 7 and 8.
- ALL** Event launches regardless of clock minute

EXAMPLE 4

Event #	Item Type	Item #	Ps End	Hour	Min	Day	Month	Year	Mo	Tu	We	Th	Fr	Sa	Su	Enabled
Event 1	PS	00	--	10	34	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	YES
Event 2	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO

F.I., the PSN 00 scheduled in the example here above (Event 1), **will stay active just from 10: 34: 00 until 10: 34: 59 every day.**

EXAMPLE 5

Event #	Item Type	Item #	Ps End	Hour	Min	Day	Month	Year	Mo	Tu	We	Th	Fr	Sa	Su	Enabled
Event 1	PS	00	--	07-12	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	YES
Event 2	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO

The PSN 00 scheduled in the example here above (Event 1), **will stay active from 07: 00: 00 until 12: 59: 59 every day.**

As a specific minute indication is not provided (see selection 'All'), Barracuda will keep active the event beginning from the first 'hour' indication that match the current one (7 am o' clock) till the first minute of '12' hour.

EXAMPLE 6

Event #	Item Type	Item #	Ps End	Hour	Min	Day	Month	Year	Mo	Tu	We	Th	Fr	Sa	Su	Enabled
Event 1	PS	02	--	07-12	10-19	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	YES
Event 2	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO

The PSN 02 scheduled in the example here above (Event 1), **will stay active as follows:**

07:10 to 07:19 09:10 to 09:19 11:10 to 11:19
08:10 to 08:19 10:10 to 10:19 12:10 to 12:19

EXAMPLE 7

Event #	Item Type	Item #	Ps End	Hour	Min	Day	Month	Year	Mo	Tu	We	Th	Fr	Sa	Su	Enabled
Event 1	PS	04	--	13	*7	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	YES
Event 2	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO

The PSN 04 scheduled in the example here above (Event 1), **will stay active only as follows:**

13:07 (i.e. from 13:07:00 to 13:07:59) **13:37** (i.e. from 13:37:00 to 13:37:59)
13:17 (i.e. from 13:17:00 to 13:17:59) **13:47** (i.e. from 13:47:00 to 13:47:59)
13:27 (i.e. from 13:27:00 to 13:27:59) **13:57** (i.e. from 13:57:00 to 13:57:59)

i.e. the star (*) symbol indicates that first minute digit (0,1,2,3,4,5) is not crucial, enabling the event any time the second digit is '7'.

SCHEDULING THE DATE

Concerning **the date**, You have several choices in deciding on how often to launch the events

*Specific days of the week, e.g., MON.WED and FRI

*Specific day / days (e.g. on 10th of March 2001 or on 13th of April, whatever the Year is)

*Every day / every month on a selected day, etc

Selecting Week option will disable the 'Calendar' option.

The **DAY** Menu provides the following options

Single Day Event launches any time clock date (day) matches the chosen one
Day Interval Event launches any time clock date (day) matches every day inside the chosen interval
ALL Event launches regardless of clock day date

The **MONTH** Menu provides the following options

Single Month event is launched any time clock date (month) matches the chosen one

ALL event is launched regardless of clock date (month)

The **YEAR** Menu provides the following options

Single Year event is launched any time clock date (year) matches the chosen one

ALL event is launched regardless of clock date (year)


WEEK day option

Event is launched on every selected week day (Year, Month and Day Menu are in this case automatically disabled)

27.17.7 ENABLING AN EVENT

Once You have composed a new event from the Edit Bar, **Enable** option must be turned active (**YES**) (see Scheduler view).

27.17.8 UPDATING AN EVENT

Once You have composed a new event from the Edit Bar and You have enabled it, please click  UPDATE button to schedule event (i.e. make it effective). Please note that Update button stays disabled if event programming is uncorrect or incomplete

27.17.9 DELETING A SCHEDULED EVENT

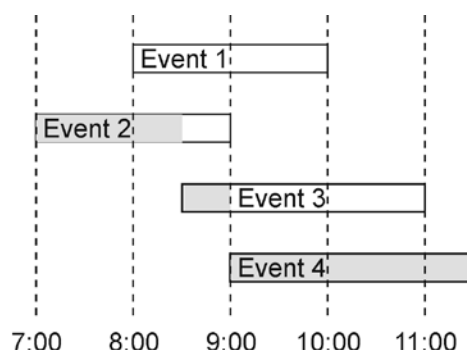
1 Select (click) the event to delete from the Event Bars: the event will be displayed in the Edit Bar

2 Select the DELETE button  from the Edit Bar

27.17.10 EVENT PRIORITY

When two or more **events** (OF THE SAME TYPE) **overlap**, the priority is automatically assigned to the event with the highest order number (e.g., Event 4 has higher priority than Event 2).

EXAMPLE 1



The picture here above shows a possible daily programming for 4 Event of the same type (f.i. 4 PSN).

In this case, only Event 4 is broadcast as programmed (from 9:00 to 11:30): Event 3 is broadcast just from 8:30 to 9:00, Event 2 from 7:00 to 8:30 and **Event 1 is kept unactive, as it is completely 'hidden' by the other events.**

We highly suggest to schedule Event with the **lowest priority** as **DEFAULT** events

EXAMPLE 8

Event #	Item Type	Item #	Ps End	Hour	Min	Day	Month	Year	Mo	Tu	We	Th	Fr	Sa	Su	Enabled
Event 1	PS	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	YES
Event 2	PS	01	--	07-12	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	YES
Event 3	PS	02	--	10-11	ALL	--	--	--	ON	OFF	OFF	OFF	OFF	OFF	OFF	YES
Event 4	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO

Event 1: PS Name # 00 (Main PS) is the **default PS** (i.e.: it is broadcast whenever no other PS are scheduled)

Event 2: PS Name # 01 is scheduled on all days, from 07.00 am to 12.59 pm. It will replace PSN 00 within this time interval.

Event 3: PS Name # 02 is scheduled just for monday from 10.00 am to 11.59 am.



When an Event ends and there's no further Events matching the current time, the Scheduler will maintain on air the last event for another 2 or 3 minutes. After that, Default PSN (i.e. PSN 00) is automatically resumed.

27.17.11 SCHEDULER OVERALL EXAMPLES

The following instructions demonstrate how to program the Scheduler to perform timing operations.

EXAMPLE 9

Event #	Item Type	Item #	Ps End	Hour	Min	Day	Month	Year	Mo	Tu	We	Th	Fr	Sa	Su	Enabled
Event 1	PS	01	03	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	YES
Event 2	PS	04	08	00-06	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	YES
Event 3	PS	04	08	06-07	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	YES
Event 4	PS	04	08	08-09	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	YES
Event 5	PS	04	08	10-11	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	YES
Event 6	RT	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	YES

Events 1 to 5 allow to broadcast two PS Sequences. Ps Sequence # 1 (from PSN 01 to PSN 03) is the default one and is broadcast every day from 12:00:00 to 23:59:59.

PS Sequence # 2 (composed by PSN 04 to 08) will be on air every day from 00:00:00 (Midnight) to 11:59:59 am.

As the time interval 00:00 to 12:00 is not preset by default, you have to cover this interval by sequencing different Events with the same PS start + PS End but different *Hour* intervals.

EXAMPLE 10 (Use of PSN Stopped)

A very advisable PS programming should include fixed PSN (i.e. 8 characters) for the most of the time (90 %) and include dynamic PS sequences starting just every few minutes (f.i. every 5 minutes).

In order to schedule such a programming, PSN Editor panel should resemble the picture here below. Note that last PSN speed (of *BBC ONE*) is set to 'Stopped' as it is that PSN which should be displayed a long time.

PSN No.	PROGRAM SERVICE NAME	PSN SPEED
Main PSN	THE	NORMAL
PSN 1	BBC	NORMAL
PSN 2	WORLD	NORMAL
PSN 3	SERVICE	NORMAL
PSN 4	BBC ONE	STOPPED

Scheduler window will resemble the following:

Event #	Item Type	Item #	Ps End	Hour	Min	Day	Month	Year	Mo	Tu	We	Th	Fr	Sa	Su	Enabled
Event 1	PS	00	04	ALL	*0	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	YES
Event 2	PS	00	04	ALL	*5	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	YES
Event 3	--	00	--	ALL	ALL	ALL	ALL	ALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NO

PS Sequence from 00 to 04 will start every 5 minutes and after the first three items have been displayed once, the last PS (BBC ONE) will stay displayed until a new Event starts.

27.18 CONFIGURING EON NETWORKS IN THE DATASET

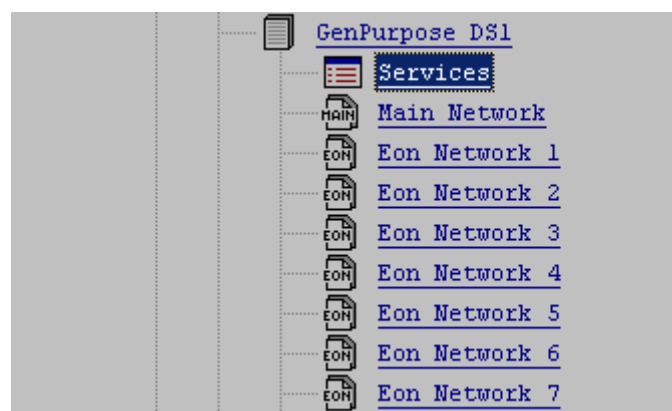
The Enhanced Other Network feature can be used to update the information stored in a receiver about programme services other than the one received. Alternative frequencies, the PS name, Traffic Programme and TrafficAnnouncement identification as well as Programme Type and Programme Item Number information can be transmitted for each other service. The relation to the corresponding programme is established by means of the relevant Programme Identification. Linkage information, consisting of four data elements, provides the means by which several programme services may be treated by the receiver as a single service during times a common programme is carried. Linkage information also provides a mechanism to signal an extended set of related services.

The Barracuda supports the following EON codes:

EON-PI, EON-PS, EON-TP, EON-TA, EON-AF, EON-PIN, EON-PTY.

Linkage information will be also added

For each DataSet, You may configure up to 10 different EON Network:



The EON Basic Services and AF windows are very similar to those associated to Main window. Refer to previous Chapters for their configuration.

Concerning AF, in particular, the EON services offer an additional programming method, called *Mapped Frequency Method*. Broadcasters may choose the more suitable method.

EON services must be enabled, by adding the associated Groups to the aired Group sequence.

28 TECHNICAL SPEC

BARRACUDA AVAILABLE VERSIONS AND OPTIONS

BARRACUDA	Digital MPX and RDS/RBDS Encoder (Smart Coder)
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Options	Description
Barracuda-DG-IN	Digital Audio Input – AES/EBU and TOS-LINK
Barracuda-Split	Split Circuit option

GENERAL

GENERAL	
Dimensions	1 rack unit, 352 x 483 x 44 mm
Weight	around 4.5 Kg
~ AC Rate	230 Vac 50 Hz / 115 Vac 60 Hz $\pm 10\%$
Power consumption	40 VA
Type of power supply	Transformer- based
AC connector	IEC, with detachable 3-wire power cord. EMI-suppressed
Processing architecture	fully digital. Based on DSP 24bit/100Mhz. Signal processing is performed by phase linear filters.
Operating temp. range	- 5 to + 50 °C

AC MAINS FUSE	
Ratings	250 mA T (for 230 Vac), 500 mA T (for 115 Vac)
Dimensions	5 x 20 mm glass tube
Type	Timed (slow blow)

COMMUNICATION

COMMUNICATION	
Serial Ports	2 x RS232 optoinsulated
Serial Port Baud Rate	1200 – 2400 – 4800 – 9600 – 19200 - 38400 Baud
Dial-Up modem	Serial Port 1 supports dial-up modems and GSM/GPRS Modem
Supported Protocols	<ul style="list-style-type: none"> - SNMP (Simple Network Management Protocol) - UECF (Universal Encoder Communication Protocol) 6.02 SPB 490 - NTP (Network Time Protocol) - dedicated ASCII protocol to interface to radio automation systems
Communication tools	<ul style="list-style-type: none"> - dedicated Pc Control Software (Smart Coder Remoter) - textual Configuration Editor
Front panel LEDs purpose	1 Double Line LCD Screen + 3 Red LEDs

INPUTS /OUTPUTS

GPI/O INTERFACE	
Inputs	5, optocoupled, floating
Connector	SubD 15 pin female, EMI suppressed
GPI Purpose	TA, M/S, Dataset selection, MPX Splitting Control (option)

AUX IN (1 AND 2)	
Connector Type	floating BNC, EMI suppressed
Pass-through Level	-40dB ÷ + 20 dB trimmer adj. max 24 Vpp input
Frequency response	30 Hz ÷ 80 KHz +/- 0.1 dB
Distortion	< 0.03 %
Input Impedance	> 10 Kohm
Purpose	MPX and SCA (RDS) Inputs – Injection of a MPX Signal Routed directly to Mpx Out (Split Option)

SYNC-OUT	
Connector Type	floating BNC, EMI suppressed
Purpose	TTL-level (5Vpp) 19 kHz Pilot Ref. Out for synchronizing external RDS coders.
Sync Out phase error	± 2 degrees (maximum)

MPX, RDS & MPX+RDS OUTPUTS	
Output Connectors	Two BNC, floating over chassis ground, EMI suppressed
Load Impedance	600 Ohm or greater
Source impedance	10 Ohm
D/A Conversion	Burr Brown PCM1704
Maximum Load Capacitance	5nF
External MPX summation	With external MPX injected into Aux 1 (Aux 2 if selected by jumper)
Composite output level	- 9.0dBm to +15.0 dBm (0.1 dBm step)

ANALOG AUDIO INPUT	
Connectors	Two EMI-suppressed XLR female.
Input Configuration	Stereo.
Input impedance	600 / 10K ohms electronically balanced, jumper selectable
Nominal Input Level (sensistivity)	Software adjustable from -9dBm to +15.0 dBm
Level Range	-21.0dBu ÷ + 24.0dBu
Max Input Level	+ 24dBu
A/D Conversion	Crystal Semiconductor CS4224, 24 bit /48 KHz delta sigma converter.
Input CMRR	>60dB (20Hz-20kHz)
Headroom	10 dB (default) / 20 dB (Full Range Mode)

DIGITAL AUDIO INPUT	
Connector Type	XLR female & optical tos/link. XLR transformer balanced & floating. 110 Ohm impedance
Input Configuration	Stereo.
Formats	AES3/EBU & Spdif
Input Rates	32/44.1/48/64/88.2/96KHz with automatic selection and jitter correction
Nominal Level adj (sensitivity)	From 0.0dBFs to -24dBFs (0.1dBu Step)
Level Range	0.0 dBFs ÷ -36dBFs
Dynamic Range (Rate Converter)	124dB (32KHz) – 126dB (44.1KHz) 126dB (48KHz) - 122dB (96KHz)
Resolution	16 / 24 bit

AUDIO LIMITER	
Purposes	<ul style="list-style-type: none"> - Overcoming errors and distortions which usually appear as undesired peaks (as high as 100 or more KHz of deviation, assuming 75 KHz mean value) on input audio program. - Control of sudden level changes on input program (up to 3 dB) - Compensation for slow input audio level changes (<i>fading</i>) - Increasing of output MPX density - Application of a smooth (logarithmic) clipping process to incoming audio to reduce out-of-band noise and therefore improve Rds and Aux signals quality
Limiter stage sources	Audio limiter applies to both analog and digital input sources.

WORK Mode	Linear Mode (Manual) Linear – Full Range (Manual) Clipper MPX (Manual)
------------------	--

MPX (STEREO) GENERATOR

Signal processing is performed by phase linear filters / all measurements referenced to 100% modulation unless otherwise noted. Barracuda version only.

Pilot Frequency	19 KHz +/- 1Hz
Pilot Injection	Adj from -25.0 dB to -15.5 dB (0.1 dB step); 6 to 18% of total deviation
Pilot Stability:	±10 ppm (-10 to +55 °C)
Pilot Phase	Adjustable +/- 12 deg. (1 deg step)
Pilot distortion	0.05 % (typical)
Pilot distortion + Noise	0.068% (on 100Khz Band)
S/N	> 90 dB (on 100 kHz band)
Composite out THD	0.005 % (typical on the whole band)
Stereo Separation	>70 dB (typical on the whole band)
Linear Crosstalk:	>-80 dB, main channel to sub-channel or sub-channel to main channel (referenced to 100% modulation).
Composite Clip Drive:	+0.0 to +6.0dB (0.1dB step), software controlled (manually or automatically)
Digital filtering / band	30 Hz to 15 kHz (-0.1 dB), 17 kHz (-70 dB), 19 kHz (-100 dB)
57 kHz (RDS/RBDS) Protection	Better than 51 dB
Crosstalk Main to Sub / Sub to Main	> 65 dB (minimum)
38KHz suppress.	< - 80dB (typical)
Pre-emphasis	Off, 50uS, 75uS (+0.1dB)
Freq Response	±0.3 dB (30Hz-15kHz)
Operation	Mono /Stereo

TEST CONDITIONS: OUT LEVEL = +12dBm, LOAD=600Ohm, PILOT LEV= -20Db MODE=STEREO

RDS / RBDS ENCODING

MODULATION	
RDS Signal generation	DSP-based , compliant to CENELEC EN 50067
RBDS Signal generation	DSP-based , compliant to United States NRSC
Coding	Differential and bi-phase
Modulation	Amplitude modulation double side band, with suppressed carrier
Subcarrier frequency	57 kHz ± 3 Hz
Bandwidth	± 2.5 kHz (- 60 dB) ± 3.0 kHz (- 80 dB)
Linear Distortion	0.01 dB
RDS / RBDS output level	0 ÷ 1200 mVpp (10 mVpp steps)
RDS phase	adj ± 120 deg (referred to MPX pilot). 1 deg step
Synchronization	Either to external 19Khz pilot tone or to external FM stereo Mpx signal. Automatic switchover to internal oscillator in case of absence or low quality of external reference signal

RDS PROGRAMMING	
RDS Command formats	fully compliant to UECP Forum document SPB 490 (Version 6.02) plus extended manufacturer 's commands list
Static services supported	<div> PS Programme Service PI Programme Identification ECC Extended Country Codes PTY Programme-type PTYN Programme Type Name TP Traffic-programme TA Traffic-announcement MS Music Speech DI Decoder Identification AF Alternative Frequencies </div> <div> PIN Programme-item number EON Enhanced Other Networks CT Clock-time and date RT Radio Text LA Linkage Actuator EG Extended Generic indicator ILS International Linkage Set indicator LSN Linkage Set Number LIC Language Identification Code SLC Slow Labeling Code </div>
Groups	0A, 0B, 1A, 1B, 2A, 2B, 3A, 3B, 4B, 5A, 5B, 6A, 6B, 7A, 7B, 8A, 8B, 9A, 9B, 10A, 10B, 11A, 11B, 12A, 12B, 13A, 13B, 14A, 14B, 15B
Character repertoires (ref Cenelec tables E1, E2, E3)	ISO 8859-1(Latin 1), ISO 8859-2(Latin 2), ISO 8859-5(Cyrillic), ISO 8859-7(Greek), ISO 8859-9(Turkish), ISO 8859-10(Nordic languages)
Data Sets	1
AF lists for each Data Set	64, containing up to 25 freq each one
PS Messages for each Data Set	64 (one of which programmable accordingly to UECP).
PS Animation / PS Sequence	Capability to transmit PS in sequences (composed by up to 60 PS) and in scrolling mode (up to 64 chars long text). Scrolling mode user controls: number of repetitions, step size, scrolling speed.
RT messages for each Data Set	16 with A/B flag control (one of which programmable accordingly to UECP)
Scheduler	Manufacturer's specific application, with capability to program up to 64 events (PS, PTY/PIN) to occur at any time with duration from 1 minute to 1 year
Interface to external Radio Automation Systems	Achieved by dedicated ASCII protocol, for RT and PS Scrolling external-driven messages.

SOFTWARE TOOLS *(included in the package)*

SMART CODER REMOTER	For Microsoft Windows 2000 sp4 / Windows XP sp3. Windows Vista and Windows Seven. For complete setup, management and control of coders in groups or individually. Capability for bidirectional and Unidirectional (one-way) links. There is no limit in the number of units which can be controlled from a single software license.
CONFIGURATION EDITOR	User-friendly, Notepad-like interface to edit, copy, load or download Barracuda's configuration in a full textual way. It allows to replicate common settings on multiple Barracuda units in seconds.
SMART TARGET ADDRESS MANAGER	To assign UECP / customized address to each target and to enable/disable supported services.

Data, specifications and layouts are furnished for informational use only and are subject to change at any time without notice.

29 WARRANTY

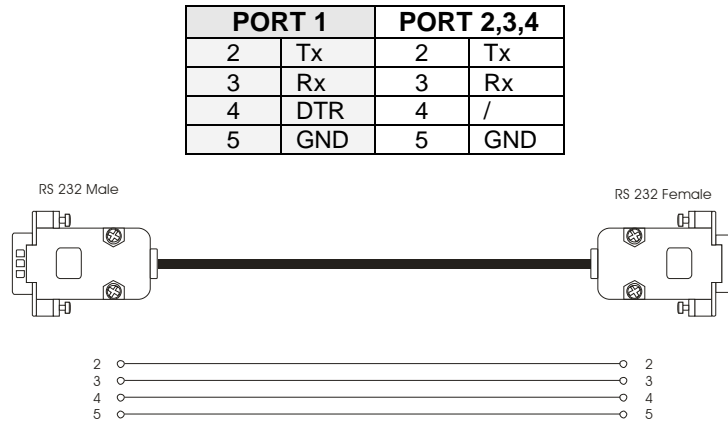
The manufacturer offers a 1-year ex works warranty.

Do not open the equipment. The warranty shall be voided if any of the warranty seals are broken.

The manufacturer shall not be liable for damage of any kind deriving from or in relation to incorrect use of the product.

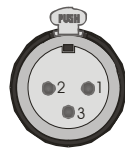
30 APPENDIX A – CONNECTOR PINOUT

30.1 RS232 CONNECTION AND PINOUT

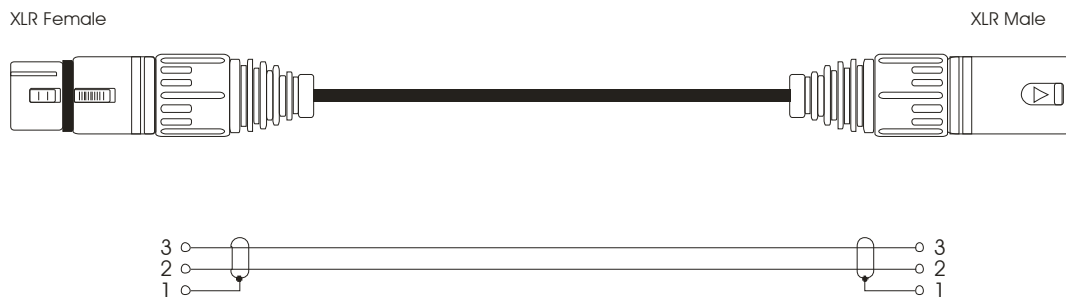


Pc connection require standard serial cables, Pin-To-Pin type, that is 'not cross'. For a correct operation, connections length must not exceed the length of 20 meters. Ports 2 and 3 use only Tx, Rx and GND signal for PC connection, while Port 1 support also the DTR (Data Terminal Ready) signal, used for modem connection. Port speed must be similar for communicating.

30.2 ANALOG & DIGITAL AUDIO CONNECTION

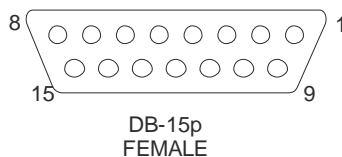


Pin 1 – Reference (GROUND)
 Pin 2 – Signal (HOT)
 Pin 3 – Return (COLD)



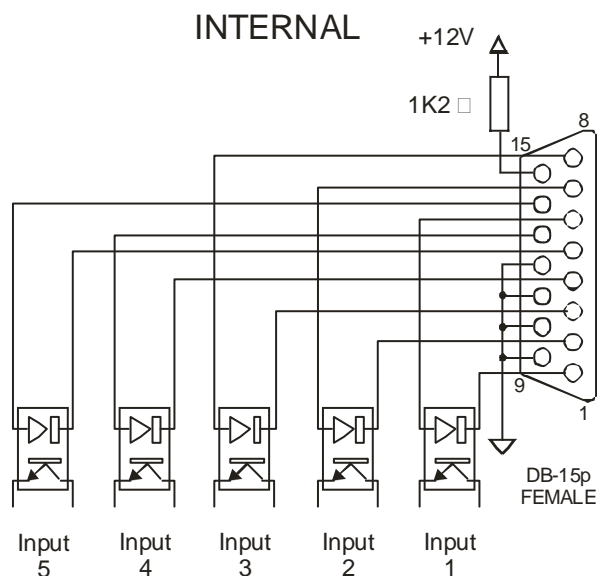
30.3 GPI CONNECTIONS OPTO INPUT

The following table displays internal connection of OPTO INPUT port and how to provide external commands:



PIN	DESCRIPTION	DIRECTION
1	Cathode photocoupler input 1	IN
2	Cathode photocoupler input 2	IN
3	Cathode photocoupler input 3	IN
4	Cathode photocoupler input 4	IN
5	Cathode photocoupler input 5	IN
6	Anode of photocoupler input 1	IN
7	Anode of photocoupler input 2	IN
8	Anode of photocoupler input 3	IN
9	GND	/
10	GND	/
11	GND	/
12	GND	/
13	Anode of photocoupler input 4	IN
14	Anode of photocoupler input 5	IN
15	+ Vcc (12 Volt through 1K2 resistor)	OUT

The pins 9,10,11,12 are linked together and provide an insulated GND connection.
A current-limited + Vdc source through a 1K2 Ohm resistor is available on pin 15.



The OPTO interface inputs can be used to dynamically alter the Shark operational attributes (f.i. some RDS flags, as TA, M/S, EMERGENCY DATASET, Split operating mode, etc) in response to logic signal transitions.

INPUT 1 may be used also for external network 'split' command.

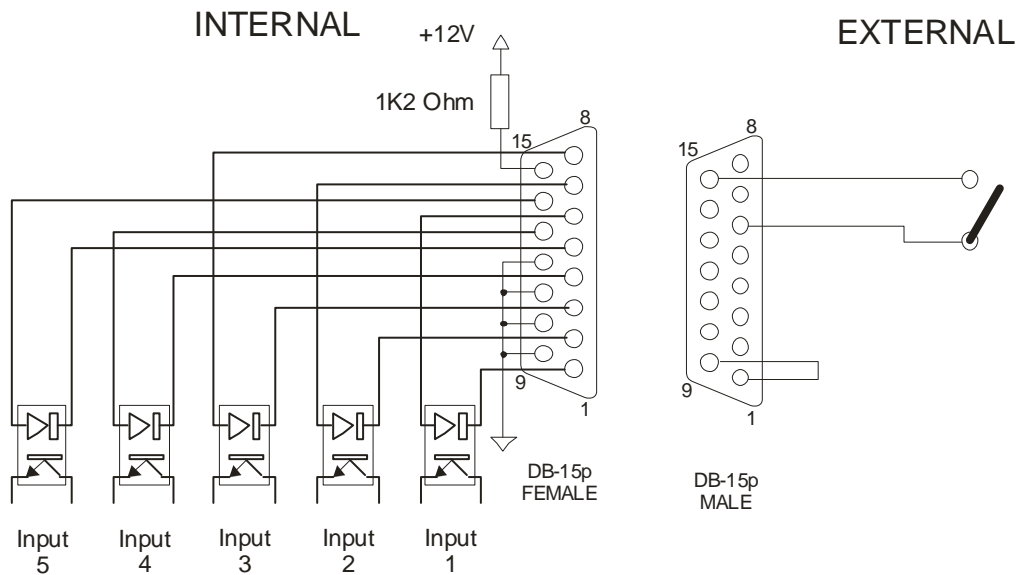
INPUT 2 enabling will cause LED 2 on Front Panel to light.

INPUT 3 enabling will cause LED 3 on Front Panel to light.

The OPTO interface is installed only on Shark versions with RDS or with SPLIT option installed.

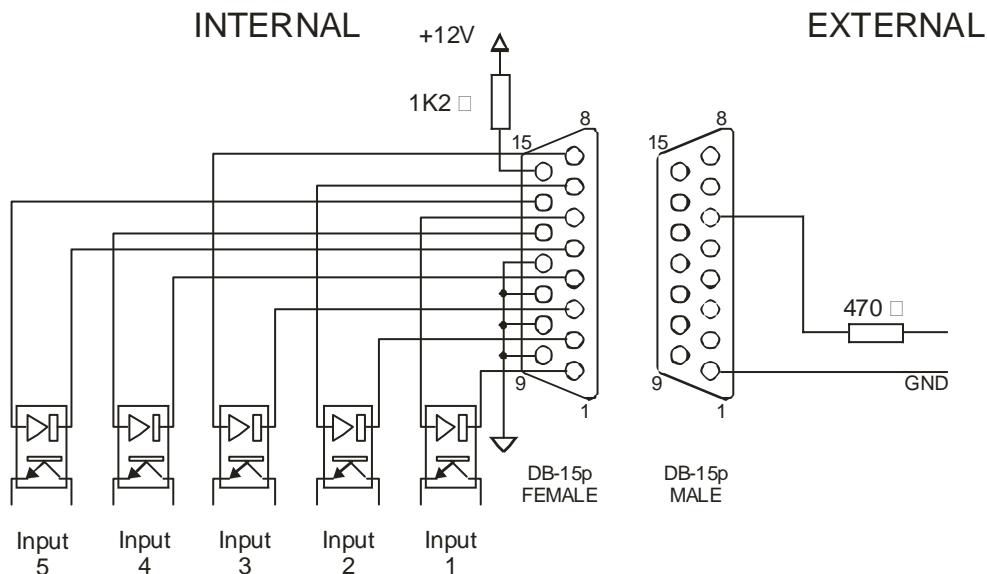
NOTE: the opto-input are not hardware assigned, but their function is assigned from the BSN.

30.3.1 EXAMPLE OF ACTIVATION OF INPUT 1 BY CLEAN CONTACT



To activate INPUT 1 on the Opto INPUT interface, permanently shortcut pin 9 and 1. The external switch will be connected across pins 15 and 6.

30.3.2 EXAMPLE OF ACTIVATION OF INPUT 1 BY TTL



Apply an external TTL signal through a 470 Ohm carbon resistor to the photodiode 1 (pins 6 and 1). Max current allowed: 10 mA. Nominal: 5 mA.

For activation of TA, TP and M/S services please refer to Chapter 3.9 of this manual, AS THEY NEED A SOFTWARE ACTIVATION IN ADDITION.

30.4 TIME SYNC IN BARRACUDA

With Barracuda it is possible to set the internal clock time in 1 way. Using UECP Command.



The status monitor for Time Sync is showed in the bottom bar of Smart Coder Remoter and SNMP.

Using UECP:

It's possible to use UECP for keep in sync Barracuda's Time. Barracuda wait a UECP RTC message once 10 minutes, but not at 00 Second HH:mm:00 Suggested is a RT Message every 5'30"

RED: In the last ten minutes it's not arrived a a UECP RTC command

GREEN: In the last ten minutes it's arrived a valid UECP RTC command

Barracuda automatically set the time, once at the accension, and then every 10 minutes at HH:mm:30



31 APPENDIX B - CONFIGURATION EDITOR SYNTAX

General Rules:

- From first ';' symbol (semicolon) to the line end the following text is considered a commentary.
- The symbol '=' (equals) assigns a single value (or a list of values) to the related command.
- The items of a data list are separated by ',' (comma) symbol.
- A non predefined alphanumeric string containing blank spaces must be typed between inverted commas (normally, blank spaces are syntax separators).
- Each numeric digit must carry own sign (plus-minus) and unit of measure. As default 0 (zero) has a positive sign.
- Non significant trailing zeroes for numeric fields are avoided (e.g. +05dB is incorrect, +5dB is right).
- Each logical command group is grouped by an identifier closed between square brackets. In turn logic groups joints are memory blocks (e.g. in the case of Dataset)
- Blanks, capital letters, small letters and indentations are not relevant. Any way, we highly suggest to follow the data format provided by Demo files, or software newly generated ones.
- The configuration editor may highlight syntax errors and warnings. Pay attention to warnings because they traces small data insertion errors.
- Possible predefined values for each parameter are shown here between curly braces {} and separated by commas. This notation doesn't reflect real syntax rule and was be used only to identify possible values that can be assigned to a parameter.
- The end of logical programming blocks are indicated as " End Point(x) ". Long programming sequences may be therefore interrupted without errors only in correspondence of these End lines.

[GENERAL_SETTINGS]

```

TARGET_MODEL=SMART_CODER
FIRMWARE_VERSION=1.0
TARGET_NAME;up to 32 chars (it appears in the Navigation Tree of control software)
TARGET_LABEL="Gabry FM" ; up to 8 chars (it appears on target frontal display)
INPUT_SIGNAL= { Analogic , Digital }
DIGITAL_RESOLUTION= { 16Bits , 24Bits }
LEFT_GAIN== { -12.0dB , -11.9dB , ... , +0.0dB , ... , +11.9dB , +12.0dB }
RIGHT_GAIN= { -12.0dB , -11.9dB , ... , +0.0dB , ... , +11.9dB , +12.0dB }
ANALOGIC_SENSITIVITY=+0.0dBm
DIGITAL_SENSITIVITY=-10.0dBFS

```

[END_GENERAL_SETTINGS]

```

[MPX_SETTINGS]                ; Start of Mpx setup logical group

MPX_LEVEL={ -9.0dBm , -8.9dBm , ... , +0.0dBm , ... , +14.9dBm , +15.0dBm }
PILOT_LEVEL={ Off , -25.0dB , -24.9dB , ... , -20.0dB , ... , -15.6dB , -15.5dB }
PILOT_PHASE={ -12Deg , -11Deg , ... , +0Deg , ... , +11Deg , +12Deg }
POST_CLIPPER_GAIN={ -6.0dB , -5.9dB , ... , +0.0dB , ... , +5.9dB , +6.0dB }
SYNC_OUT={ Enabled , Disabled }
MPX_MODE={ Mono , Stereo }
PREEMPHASIS={ Off , 50us , 75us }
OUTPUT_MODE={ Normal , Tone , Splitter }

[END_MPX_SETTINGS]            ; End of Setup Mpx logical group

[AUDIO_CONTROL]               ; Start of Audio control logical group

WORK_MODE=Clipper_Manual, LINEAR FULL RANGE, Linear MANUAL

[END_AUDIO_CONTROL]           ; End of Audio control logical group

[ACCESS_RIGHTS]

; User can modify access rights for these services of each Port:
;
; - Code - Service Description -
;
; 01    PI
; 02    PS
; 03    TA/TP
; 04    DI
; 05    MS
; 06    PIN
; 07    PTY
; 0A    RT
; 0B    PSN Enable/Disable
; 0D    Real Time Clock
; 0E    RDS Level
; 13    AF
; 14    EON AF
; 15    EON TA Control
; 16    Group Sequence
; 17    Request Message
; 18    Message Acknowledgment
; 19    CT On/Off
; 1A    Slow Labelling Codes
; 1C    Dataset Select
; 1E    RDS On/Off
; 22    RDS Phase
; 23    Site Address
; 25    IH
; 26    TDC
; 27    Encoder Address
; 28    Make PSN List
; 2A    TA Control
; 2B    EWS
; 2C    Communication Mode
; 2D    Manufacturer's or Network Operator's Specific Command
; 2E    Linkage Information
; 2F    PS Character Code Table Selection
; 30    TMC
; 3A    Encoder Access Right
; 3B    Communication Port Configuration - Mode
; 3C    Communication Port Configuration - Speed
; 3D    Communication Port Configuration - Timeout

```

```

;      3E      PTYN
;
;   for each Port.
;
;   NOTE: For current port disable ALL services is not allowed.
;         User can specify service ID (separated by comma) or
;         simply type NONE or ALL for a global Enable/Disable.
;
; *** Current Port: Port 1 ***

[RDS_SETTINGS]                ; Start of RDS setup logical group

RDS_ON_OFF={ Off, On }
ADD_RDS_TO_AUX_MPX={ Off, On }
RDS_LEVEL={Off , -43.9dB, -43.8dB , .. , -31.5dB, .. , -20.1dB , -20.0dB }
RDS_LEVEL={0.000Vpp , 0.005Vpp , 0.010Vpp, .. , 1.195Vpp , 1.200Vpp }1
RDS_PHASE={-120Deg , -119Deg , .. , +0Deg , .. , +119Deg , +120Deg }
RDS_MODE={Uecp-Compatible, Uecp-Extended }
RDS_SYNC={Internal , External}
ACTIVE_DATASET={DataSet_1 , DataSet_2 , DataSet_3 , DataSet_4 , DataSet_5 , DataSet_6 }
ALTERNATIVE_DATASET={ DataSet_1,DataSet_2,DataSet_3,DataSet_4,DataSet_5,DataSet_6 }
ALTERNATIVE_DATASET_ON={Uecp-Command , External_Input_1 , .. , External_Input_5}
PS_CHARACTER_CODE_TABLE_SELECT={ No_Control_Characters , Ebu_Latin_Based ,
                                Ebu_Common_Core, Iso_646}
LANGUAGE_CODE_TABLE_SELECT={ Latin_1 , Latin_2 , Cyrillic , Greek , Turkish ,
                             Nordic_Languages }
TA_CONTROL_GROUP_SPACING={ 0 , 1 , ... , 8 }
TA_CONTROL_ON_TRANSITION_GROUPS={ 0 , 1 , ... , 15 }
TA_CONTROL_OFF_TRANSITION_GROUPS={ 0 , 1 , ... , 15 }
EON_TA_CONTROL_GROUP_SPACING={ 0 , 1 , ... , 8 }
EON_TA_CONTROL_ON_TRANSITION_GROUPS={ 0 , 1 , ... , 15 }
EON_TA_CONTROL_OFF_TRANSITION_GROUPS={ 0 , 1 , ... , 15 }

[END_RDS_SETTINGS]            ; End of RDS Setup logical group

[REAL_TIME_CLOCK]             ; Start of RTC group

RDS_CT={Enabled , Disabled}
RDS_TIME_OFFSET={-12:00 , -11:30 , .. , +0:00 , .. , +11:30 , +12:00}

[END_REAL_TIME_CLOCK]         ← End Point(1)2

                                [START_DATASET_1] ; Start of DataSet 1 commands group

[SERVICES_SETUP]              ; Start of RDS Services group

GROUP_SEQUENCE=                { 0A , 0B , 1A , 1B , 2A , 2B , 3A , 3B , 4B , 5A , 5B ,
                                6A , 6B , 7A , 7B , 8A , 8B , 9A , 9B , 10A, 10B , 11A ,
                                11B , 12A , 12B , 13A, 13B , 14A , 14B ,15B }3
GROUP_1A_SLC_SEQUENCE={ 0 , 1 , 2 , 3 , 4 , 5 , 6 , 7 }4

```

¹ For Rds Only Targets (it replaces line above)

² If configuration file ends at this point and RDS plug is installed, a Warning message is displayed, as Dataset has not been defined. If RDS plug is not present but further data have been entered (up to one of the following End Point), these Data will be discarded.

³ You may enter up to 64 groups, picked up from the listed ones (all except type 4A & 15A groups).

⁴ You may enter up to 16 slow labelling codes in sequence, regardless omissions or duplicates.

```

GROUP_14A_VARIANTS_SEQUENCE={ 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 }5
PSN_LIST={ 1st PSN , 2nd PSN , ... , 11th PSN } ; values from PSN_1 to PSN_255 allowed6
EON_1={Enabled , Disabled}
EON_2={Enabled , Disabled}
EON_3={Enabled , Disabled}
EON_4={Enabled , Disabled}
EON_5={Enabled , Disabled}
EON_6={Enabled , Disabled}
EON_7={Enabled , Disabled}
EON_8={Enabled , Disabled}
EON_9={Enabled , Disabled}
EON_10={Enabled , Disabled}

```

[END_SERVICES_SETUP] End of RDS Services group

[BASIC_SERVICES]

```

PROGRAM_IDENTIFICATION=0000    ; 16 Bits (4 Digits) Exadecimal Code
DECODER_IDENTIFICATION={Mono_Static_Pty                      , Stereo_Static_Pty ,
                        Not_Artificial_Head_Static_Pty , Not_Compressed_Static_Pty ,
                        Mono_Compressed_Static_Pty        , Stereo_Compressed_Static_Pty,
                        Mono_Dynamic_Pty                   , Not_Yet_Assigned ,
                        Mono_Static_Dynamic_Pty            , Stereo_Dynamic_Pty ,
                        Not_Artificial_Head_Dynamic_Pty, Not_Compressed_Dynamic_Pty ,
                        Mono_Compressed_Dynamic_Pty        , Stereo_Compressed_Dynamic_Pty}

LINK_SET_NUMBER=000                ; 12 bits (3 digits) hexadecimal code
LINKAGE_ACTUATOR={ Disabled , Enabled }
EXTENDED_GENERIC_LINK={ Off , On }
INTERNATIONAL_LINK_SET={ Off , On }
TRAFFIC_PROGRAM={ Disabled , Enabled }
TRAFFIC_ANNOUNCEMENT={ Disabled , Enabled , Positive_Input_1 , Positive_Input_2 ,
                      Positive_Input_3 , Positive_Input_4 , Positive_Input_5 ,
                      Negative_Input_1 , Negative_Input_2 , Negative_Input_3 ,
                      Negative_Input_4 , Negative_Input_5 , Positive_Input_Pulse ,
                      Negative_Input_Pulse }

MUSIC_SPEECH={ Speech , Music , Positive_Input_1 , Positive_Input_2 ,
               Positive_Input_3 , Positive_Input_4 , Positive_Input_5 ,
               Negative_Input_1 , Negative_Input_2 , Negative_Input_3 ,
               Negative_Input_4 , Negative_Input_5 }

SLOW_LABELING_CODE_1=000           ; 12 bits (3 digits) hexadecimal code
SLOW_LABELING_CODE_2=000           ; 12 bits (3 digits) hexadecimal code
SLOW_LABELING_CODE_3=000           ; 12 bits (3 digits) hexadecimal code
SLOW_LABELING_CODE_4=000           ; 12 bits (3 digits) hexadecimal code
SLOW_LABELING_CODE_5=000           ; 12 bits (3 digits) hexadecimal code
SLOW_LABELING_CODE_6=000           ; 12 bits (3 digits) hexadecimal code
SLOW_LABELING_CODE_7=000           ; 12 bits (3 digits) hexadecimal code
SLOW_LABELING_CODE_8=000           ; 12 bits (3 digits) hexadecimal code

```

[END_BASIC_SERVICES]

[ALTERNATIVE_FREQUENCIES]⁷

```

AF_1= {87.6 , 87.7 , ... , 107.9 , List_End } , { ... } , { ... } , ...
. . . .
. . . .

```

⁵ You may enter up to 16 variants, once per value. No duplicates permitted.

⁶ You may enter 1 psn (Main PSN) up to 11 PSN (1 Main + 10 Eon PSN)

⁷ Each list may comprise up to 25 frequencies and List_End must be at the end. You may enter up to 64 lists.

```
AF_64={87.6 , 87.7 , ... , 107.9 , List_End }, { ... }, { ... } , ...
```

```
[END_ALTERNATIVE_FREQUENCIES]
```

```
[RADIOTEXT]8
```

```
; -----A/B-Loops-Text-(Max 64 chars)--
```

```
RADIOTEXT_0= OFF, 00, "RADIOTEXT MESSAGE STRING MAX 64 CHARS"
```

```
. . . .
```

```
RADIOTEXT_15= OFF, 00, "RADIOTEXT MESSAGE STRING MAX 64 CHARS"
```

```
[END_RADIOTEXT]
```

```
[PIN_PTY]
```

```
; <Day>      = { Today , 1 , ... , 31 }
```

```
; <Hour>     = { 0 , ... , 23 }
```

```
; <Min>      = { 1 , ... , 59 }
```

```
; <ProgType>= {NO_PROGRAMME_TYPE , NEWS , CURRENT_AFFAIRS , INFORMATION , SPORT ,  
EDUCATION , DRAMA , CULTURE , SCIENCE , VARIED , POP_MUSIC ,  
ROCK_MUSIC , EASY_LISTENING_MUSIC , LIGHT_CLASSICAL ,  
SERIOUS_CLASSICAL , OTHER_MUSIC , WEATHER , FINANCE , CHILDRENS_PROGS ,  
SOCIAL_AFFAIRS , RELIGION , PHONE_IN , TRAVEL , LEISURE_&_HOBBY ,  
JAZZ_MUSIC , COUNTRY_MUSIC , NATIONAL_MUSIC , OLDIES_MUSIC ,  
FOLK_MUSIC , DOCUMENTARY , ALARM_TEST , ALARM }
```

```
; "PTYN MSG" Max 8 characters.9
```

```
; -----Day-----Hour-----Min-----Pty-----PTYN---
```

```
PIN_PTY_0= <Day> , <Hour> , <Min> , <ProgType> , "PTYN MSG"
```

```
. . . .
```

```
PIN_PTY_31= <Day> , <Hour> , <Min> , <ProgType> , "PTYN MSG"
```

```
[END_PIN_PTY]
```

```
[PROGRAM_SERVICE_NAMES]10
```

```
DEFAULT_PS_END={ 0 , .. , 59 }
```

```
; -----PsName-----Speed-----
```

```
PSNAME_0= "PsName00" , { Stopped , Slowest , Slow , Normal , Fast , Fastest}
```

```
. . . .
```

```
PSNAME_59= "PsName00" , { Stopped , Slowest , Slow , Normal , Fast , Fastest}
```

```
[END_PROGRAM_SERVICE_NAMES]
```

```
[PROGRAM_SERVICE_SCROLLING]11
```

⁸ Each text in inverted commas exceeding 64 characters, will be truncated and a warning message will be generated. You may enter up to 16 messages. A/B flag and loops are explained in UECP Standard SPB 490 rev 6.02 pag. 32

⁹ PTYN exceeding 8 characters will be truncated and a warning message will be generated. You may enter up to 32 Pin_PTY items.

¹⁰ PsName messages exceeding 8 characters will be truncated and a warning message will be generated. You may enter up to 32 PsName items.

¹¹ PsScrolling messages exceeding 32 characters will be truncated and a warning message will be generated. You may enter up to 4 messages.

```

; -----PsScrolling_Name-----Speed-----

PS_SCROLL_0="Ps Scrolling Message", { Stopped , Slowest , Slow , Normal , Fast ,
Fastest}
. . . .
. . . .
PS_SCROLL_3="Ps Scrolling Message", { Stopped , Slowest , Slow , Normal , Fast ,
Fastest}

[END_PROGRAM_SERVICE_SCROLLING]

[EVENT_SCHEDULER]12

; <Type>      = { None, PS , PTY/PIN , PS_SCR }
; <Start>     = { 0 , ... , 59 }
; <End>       = { 1 , ... , 59 }

; <Min>       = { 0 , ... , 59 , 0-29 , 30-59, 0-14 , 15-29 ,
                 30-44 , 45-59 , 0-9 ,10-19 , 20-29 , 30-39 , 40-49 ,
                 50-59 , All , *0 , *1 , *2 , *3 , *4 , *5 , *6 , *7 ,
                 *8 , *9 , *0-*4 , *5-*9 , *0-*1 , *1-*2 , *2-*3 , *3-*4 ,
                 *4-*5 , *5-*6 , *6-*7 , *7-*8 , *8-*9 , *9-*0 , 00-04 , 05-09 ,
                 10-14 , 15-19 , 20-24 , 25-29 , 30-34 , 35-39 , 40-44 , 45-49 ,
                 50-54 , 55-59 , Even , Odd }

; <Day>       = { 1 , ... , 31 , 1-7 , 1-14 , 1-22 , 8-14 , 8-22 , 8-31 , 15-22 , 15-31 ,
                 23-31 , 20-31 , 20-27 , 28-31 , ALL }

; <Month>     = { Jan , Feb , Mar , Apr , May , Jul, Aug , Sep , Oct , Nov , Dec , None,
                 ALL }
; <Year>      = { 1 , ... , 99 , None , All }
; <Mo>..13

EON_PSNAME="NETWRK01" ; up to 8 chars
EON_PROGRAM_IDENTIFICATION=0000 ; 16 Bits (4 Digits) Exadecimal Code
EON_PROGRAM_TYPE= { NO_PROGRAMME_TYPE , NEWS , CURRENT_AFFAIRS , INFORMATION , SPORT ,
                    EDUCATION , DRAMA , CULTURE , SCIENCE , VARIED , POP_MUSIC ,
                    ROCK_MUSIC , EASY_LISTENING_MUSIC , LIGHT_CLASSICAL ,
                    SERIOUS_CLASSICAL , OTHER_MUSIC ,
                    WEATHER , FINANCE , CHILDRENS_PROGS , SOCIAL_AFFAIRS , RELIGION ,
                    PHONE_IN , TRAVEL , LEISURE_&_HOBBY , JAZZ_MUSIC , COUNTRY_MUSIC ,
                    NATIONAL_MUSIC , OLDIES_MUSIC , FOLK_MUSIC , DOCUMENTARY ,
                    ALARM_TEST , ALARM }

EON_TRAFFIC_PROGRAM={ Enabled , Disabled }

```

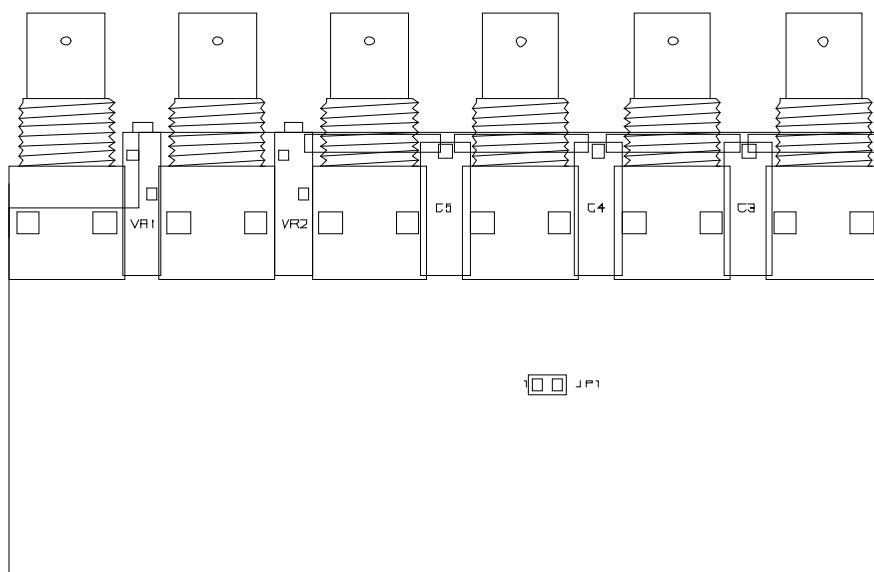
¹² You may enter up to 64 events.

¹³ Eon_PsName messages exceeding 8 characters will be truncated and a warning message will be generated.

```
EON_TRAFFIC_ANNOUNCEMENT={ Disabled , Enabled , Positive_Input_1 , Positive_Input_2 ,  
                             Positive_Input_3 , Positive_Input_4 , Positive_Input_5 ,  
                             Negative_Input_1 , Negative_Input_2 , Negative_Input_3 ,  
                             Negative_Input_4 , Negative_Input_5 , Positive_Input_Pulse ,  
                             Negative_Input_Pulse }  
EON_PIN_DAY= { 1 , ... , 31 }  
EON_PIN_HOUR={ 0 , ... , 23 }  
EON_PIN_MINUTE={ 0 , ... , 59 }  
LINK_SET_NUMBER=000 ; 12 Bits (3 Digits) Exadecimal Code  
LINK_ACTUATOR={ Off , On }  
EXTENDED_GENERIC_LINK={ Off , On }  
INTERNATIONAL_LINK_SET={ Off , On }  
  
[END_EON_BASIC_SERVICES]  
  
[EON_AF]  
  
METHOD={ Method_A , Frequency_Map_1 , .. , Frequency_Map_4 }  
EON_AF=={87.6 , 87.7 ,... , 107.9 , List_End } , { ... } , { ... } , ...  
  
[END_EON_AF]
```

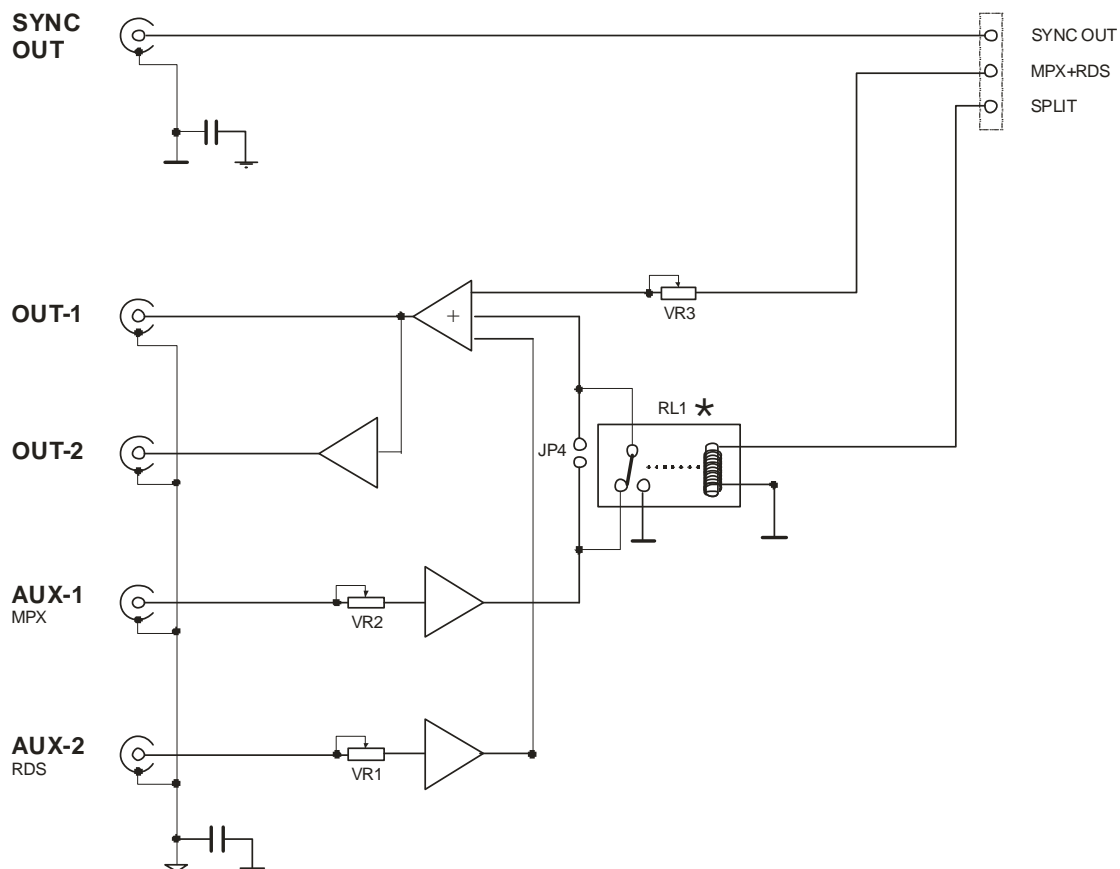

32 APPENDIX C – MPX BOARD JUMPER SETTINGS

The following picture shows **factory jumper position** on MPX output card.



32.1 JUMPERS LEGEND

	Description	Factory Preset
JP1	It bypass the SPLIT relay	The Jumper is present whenever the SPLIT option is NOT installed

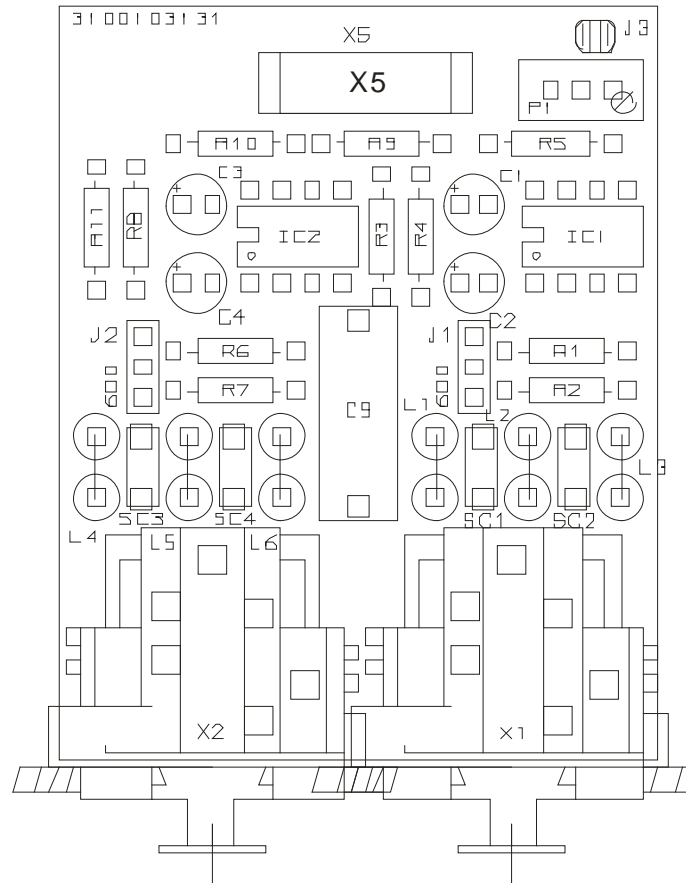
32.2 MPX CARD – BLOCK DIAGRAM WITH DEFAULT JUMPER POSITIONS

★ INSTALLED WITH THE 'SPLIT' VERSION ONLY

33 APPENDIX D – AUDIO INPUT CARD SETTINGS

33.1 ANALOG INPUT IMPEDANCE

The input impedance may be altered to **600Ω**, in place of default **10kΩ**, by moving the Jumpers **J1** e **J2** placed behind the XLR connectors, on the audio input board (see figure).



J1-J2		INPUT INPEDANCE 600 OHM
		INPUT INPEDANCE 10K OHM

34 APPENDIX E – FIRMWARE UPGRADE PROCEDURE

The Barracuda comes from the factory with the most recent firmware installed just prior to shipping. When required, the firmware can be updated with the latest available version. In order to upgrade the processor, please follow this procedure. FW Upgrade can be performed on Windows environment.



After an initialization of the device (firmware upgrade), all user presets and adjustments may be erased and/or overwritten by the new factory setup! Please save the current configuration by means of the Configuration Editor tool prior to proceeding with the firmware upgrade.



When upgrading the firmware, do not forget to install the new associated software version of PC remote control. There is a direct correspondence between the firmware and software versions. For example, the rel. 3.0 of Pc software requires the firmware version 3.0 installed on the unit and vice versa.

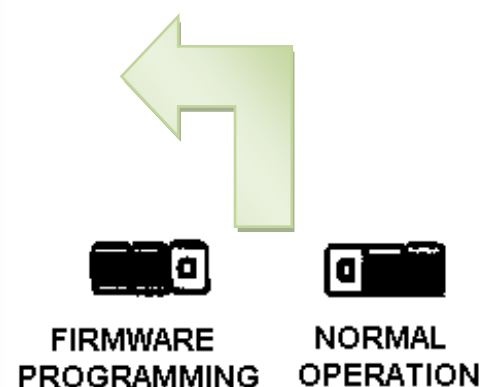
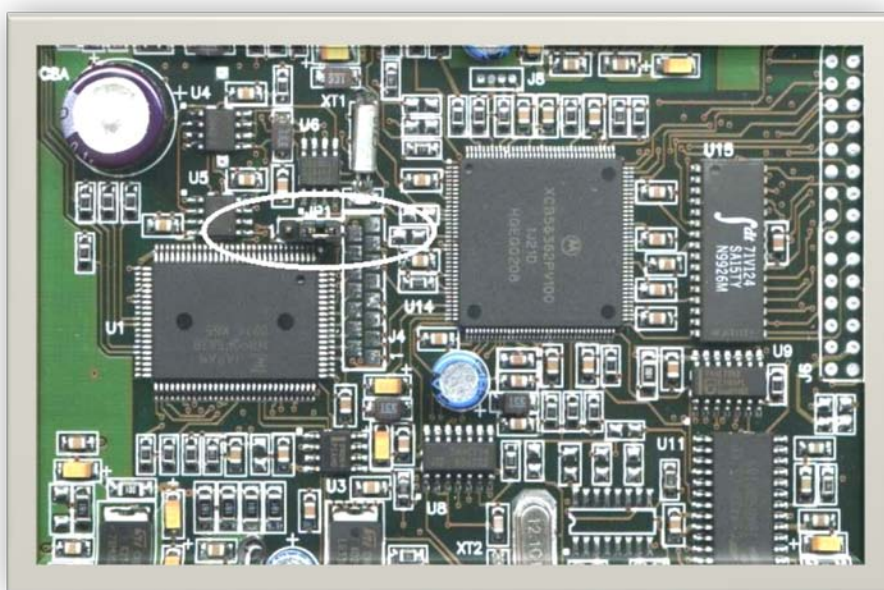
More precisely, the two first digits must match, as possible sub-releases (identified by the third digit) are not involved in the firmware/software compatibility.

As general rule, software version X.Y.Z runs with firmware version X.Y.K



1) MAKING THE UNIT READY FOR UPGRADING

- A. Shut off the unit
- B. Remove the equipment cover and the guarantee labels
- C. Set the jumper JP1 of the Mother board to the **LEFT (external)** position. Jumper is located near to the large battery, on the **left hand** (see highlighted jumper in the picture).



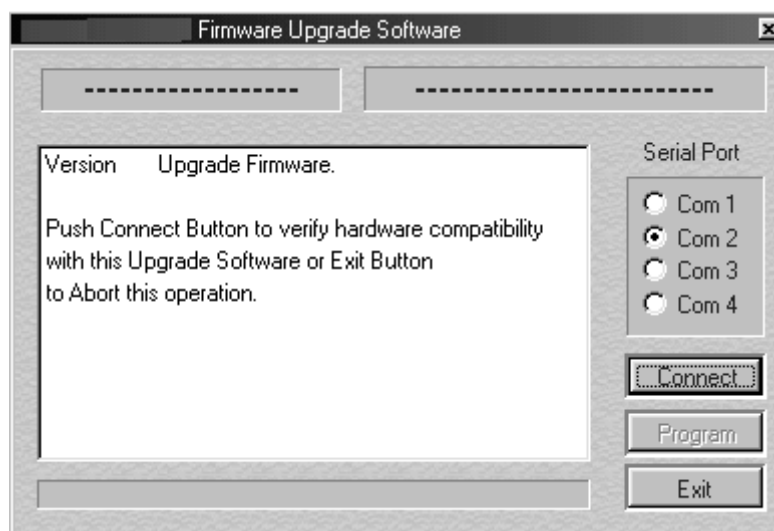
- D. Connect the Barracuda **SERIAL** port **1** to that of the Host PC. Please insert (or remove) the serial connector only with processor turned off. A regular (i.e. not crossed) cable is required.
- E. Turn the unit on.
- F. Make sure that on the front panel the LCD display is empty.

2) PC OPERATION

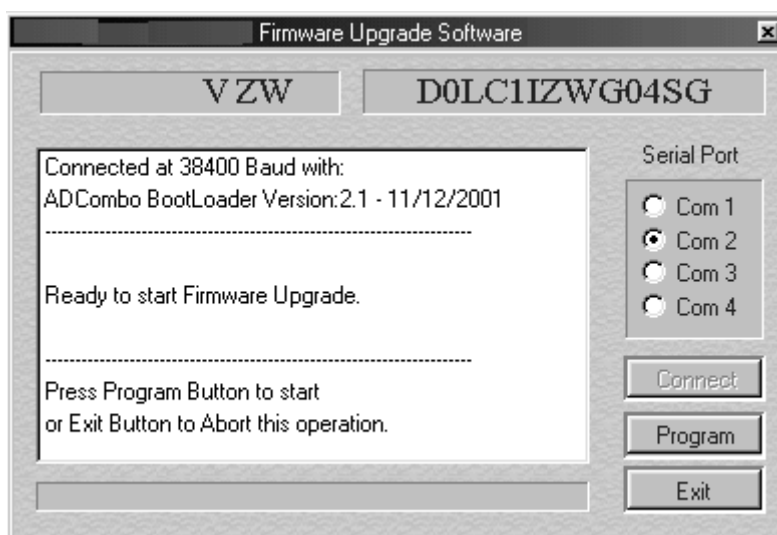
- A. Close all opened applications on the PC.
- B. Access the **Fw UpGrades** folder
- C. Double click the **file associated to the desired upgrade**:

NOTE: to make sure of current version of Yr Barracuda, please enter the Firmware Version page from the System Information menu.

The following screen will be displayed:



- D. Select the **PC serial port** on the screen
- E. Click **Connect** button.



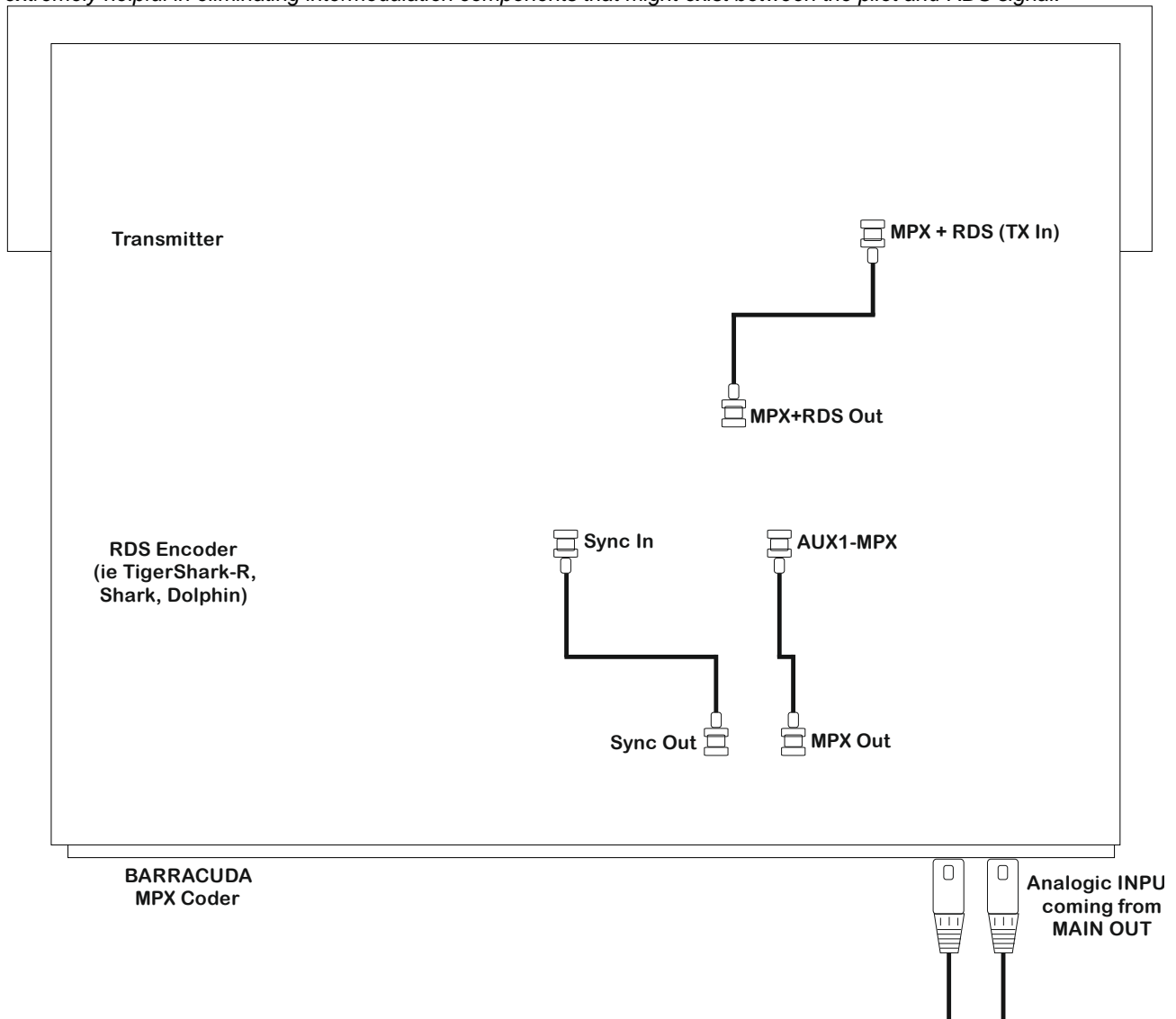
- F. Make sure the Identification is correctly done (*Ready to start Firmware Upgrade* message + firmware code displayed in the right field), and click '**Program**' button. The upgrade will continue automatically.
- G. Once you have completed the upgrade procedure, shut off the unit.
- H. Move the **switch** back to the previous position
- I. Turn the coder back on.

35 APPENDIX F – SIDECHAIN / LOOPTHROUGH CONNECTION MODES

The MPX+RDS Encoder Barracuda can be connected to the exciter and to the RDS generator / audio processor in two different modes: Sidechain and Loop-Through. The first one is highly recommended, as the composite / MPX is better preserved and program transmission will be not interrupted even in the event of encoder failure.

35.1 SIDECHAIN MODE (SUGGESTED)

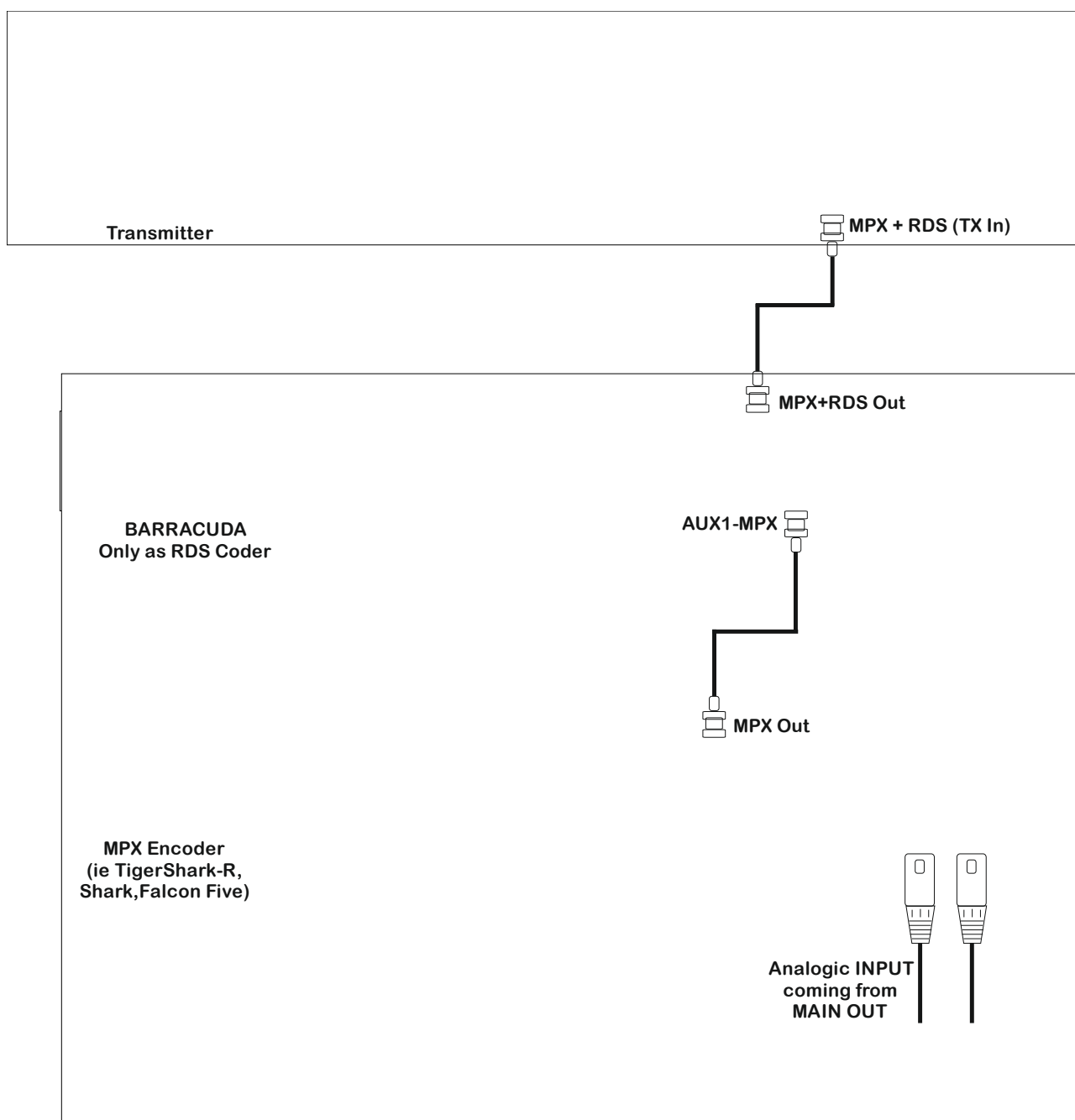
Depending on the availability of a SYNC reference signal, the following cases are possible: **NB** Using the 19 kHz clock from the Barracuda stereo generator makes it much easier to phase lock the RDS signal to the pilot frequency. This is extremely helpful in eliminating intermodulation components that might exist between the pilot and RDS signal.



35.1.1 LOOP-through – MPX MODE

In the loop-through mode, the output of the stereo generator is directly cabled at the AUX 1 input of RDS encoder. The RDS output of the encoder will be then connected to the normal composite/Mpx input of the FM exciter. As noticed, this configuration is NOT recommended, as the composite / MPX is passing through the RDS encoder and program transmission will be interrupted in the event of RDS encoder failure. This configuration doesn't need to alter the encoder factory preset. RDS subcarrier phase will be locked either to external FM stereo MPX signal. Correct synchronization will cause MPX LED ON in the front panel.

External Synch MUST be enabled from the control panel menu or from the Pc control software



External Sync MUST be enabled from the control panel menu or from the Pc control software



*MPX pilot suitable level: minimum 100 mVpp, max 1,9 Vpp
 19 kHz Sync tolerance : +/- 5Hz to lock; +/- 15 Hz to unlock
 An automatic switchover to internal oscillator in case of absence or low quality of external reference signal is performed.*

The level of the injected signal may be adjusted by means of the trimmer next to the corresponding BNC connector (no software control is provided for this purpose). This trimmer is factory preset for a gain of 0 dB.

Correct synchronization will cause MPX LED ON in the front panel.

LOOP-THROUGH MODE

In the loop-through mode, the output of the stereo generator is directly cabled at the AUX 1 input of RDS encoder. The RDS output of the encoder will be then connected to the normal composite/Mpx input of the FM exciter.

As noticed, this configuration is NOT recommended, as the composite / MPX is passing through the RDS encoder and program transmission will be interrupted in the event of RDS encoder failure. This configuration doesn't need to alter the encoder factory preset. RDS subcarrier phase will be locked either to external FM stereo MPX signal. Correct synchronization will cause MPX LED ON in the front panel.

External Synch MUST be enabled from the control panel menu or from the Pc control software



MPX pilot suitable level: minimum 100 mVpp, max 1,9 Vpp

19 kHz Sync tolerance : +/- 5Hz to lock; +/- 15 Hz to unlock

An automatic switchover to internal oscillator in case of absence or low quality of external reference signal is performed.

The level of the injected signal may be adjusted by means of the trimmer next to the corresponding BNC connector (no software control is provided for this purpose). This trimmer is factory preset for a gain of 0 dB (unity gain).

- The END -